2169

DOUBLE CASSETTE STEREO TAPE RECORDER WITH MUSIC PROCESSOR

STEREO-DOPPELCASSETTENREKORDER MIT MUSIK-PROZESSOR

MAGNETOPHONE A DOUBLE CASSETTE STEREO AVEC ORDINATEUR DE MUSIQUE

MAGNETOFONO ESTEREOFONICO DE CASSETTE DOBLE CON PROCESADOR DE MUSICA

STEREO DUBBELKASSETTBANDSPELARE MED MUSIK-PROCESSOR

雙卡式磁帶立體聲錄音機，帶音樂程序處理器

더블 카세트 스트레오 녹음기 / 음악 프로세서

ENGLISH

DEUTSCH

FRANÇAIS

ESPAÑOL

SVENSKA

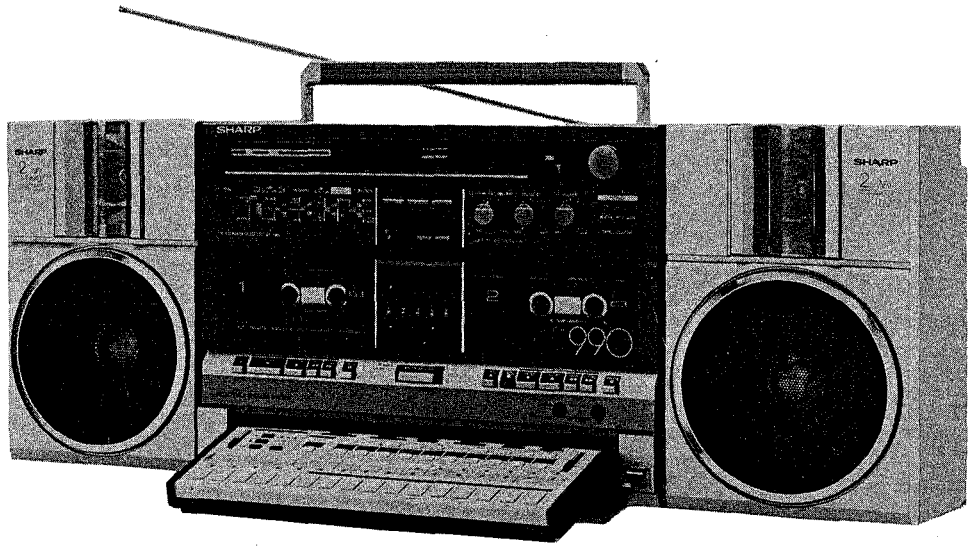
中文

韓國語

عربي

OWNER'S MANUAL
BEDIENUNGSANLEITUNG
MODE D'EMPLOI
MANUAL DE MANEJO
BRUKSANVISNING
使用說明書
사용설명서

GF-990G



MUSIC PROCESSOR

Double Cassette

High-Speed Dubbing

GRAPHIC EQUALIZER

Detachable Speaker

APLD Auto Program Locate Device

APPS Auto Program Pause System

SHARP

SHARP CORPORATION

22-22, Nagaike-cho, Abeno-ku, Osaka, Japan

2169

NOTE FOR USERS IN U.S.A.

FOR YOUR RECORDS

For your assistance in reporting this unit in case of loss or theft, please record below the serial number which is located on the rear of the unit.
Please retain this information.

Model number GF-990G

Serial number _____

Data of purchase _____

Place of purchase _____

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CALLING FOR SERVICE

For your nearest Sharp authorized service station,

Please call Toll Free: **800-447-4700**
In Hawaii or Alaska, please contact your local dealer.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

NOTE FOR USERS IN UK

IMPORTANT:
The wires in the mains lead of this apparatus are coloured in accordance with the following code:

BLUE: "NEUTRAL"
BROWN: "LIVE"

CONNECTING PLUG TO MAINS LEAD:
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.
- The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

This apparatus must be protected by a 3A fuse in the mains plug or distribution board.

This equipment leaves the factory adjusted for use on a 220 ~ 240 volt (50 Hz) mains supply.
For other voltages see page 5.

Note for Users in U.S.A.:
It is the intent of Sharp that this product be used in full compliance with the copyright laws of the United States and that prior permission be obtained from copyright owners whenever necessary.

Note for Users in UK:
Recording and playback of any material may require consent which SHARP is unable to give. Please refer particularly to the provisions of Copyright Act 1956, the Dramatic and Musical Performers Protection Act 1958, the Performers Protection Acts 1963 and 1972 and to any subsequent statutory enactments and orders.

Note for Users in Australia:
Copyright may exist in material you wish to record. Copying such material without permission of the relevant licensee(s) or owner(s) of the copyright is prohibited by law.
SHARP is not in a position to authorize the recording of copyright works and nothing in this OPERATION MANUAL should be read or implied as giving that authority.

For other countries:
Audio-visual material may consist of copyrighted works which must not be recorded without the authority of the owner of the copyright. Please refer to relevant law in your country.

Anmerkung:
Audio-visuelles Material kann Urheberrechte umfassen, die ohne Genehmigung des Eigentümers dieser Urheberrechte nicht aufgenommen werden dürfen. Siehe die entsprechenden nationalen Gesetze.

Note:
Le matériel audio-visuel peut comporter des oeuvres faisant l'objet de droits d'auteur qui ne peuvent être enregistrées sans l'autorisation du possesseur du droit d'auteur, veuillez vous référer aux réglementations nationales en vigueur.

Nota:
El material audio-visual puede consistir en trabajos haciendo el objeto de derechos de autor que no se pueden grabar sin la autorización del poseedor del derecho de autor. Se ruega referir a las reglamentaciones en vigor de su país.

Observera:
Audiovisuell material kan innehålla upphovsrättsarbete som inte skall mångfaldigas utan tillstånd av copyrightinnehavaren. Se den tillämpliga lagen i ditt land.

請注意：
凡是有關視・音頻材料可能都有版權，不得擅自複製，除了版權所有者許可時而外。關於此事，請參照　貴國國內之有關法律規定爲盼。

주의：
시청각 재료의 복사는 복사권 소유자의허가 없이는　무단 복사가 금지되어 있읍니다.

In order to protect this product from damage during transportation, repack it as illustrated on the flap of the packing case.

Um Beschädigung beim Transport zu verhindern, verpackt man das Gerät wie auf der Lasche des Kartons dargestellt.

Afin d'éviter d'endommager ce produit pendant le transport, le remettre dans son emballage de la façon indiquée sur le rabat de la boîte d'emballage.

Para evitar que el productor resulte dañado durante el transporte, está empaquetado de la forma ilustrada en la tapa de la caja.

För att skydda produkten för skador under dess transport, skall du återpacka den i packlådan enligt illustrationen på packlådans flik.

爲保護此製品免在輸送過程中受到損傷起見，每一次總要加以重新的包裝，要領如同其包裝箱之圖示説明卡上所示。

본 제품을 운송중에 손상을 입기 쉬우므로 운송시에는 그림과 같이 재포장을 하여 주십시오.

This apparatus complies with requirements of BS 800 and EEC directive 76/889/EEC.

Das Apparat stimmt mit den Bedingungen der EG-Richtlinien 76/889/EWG überein.

Cet appareil répond aux spécifications de la directive CCE 76/889/CCE.

Quest'apparecchio è stato prodotto in conformità alle direttive CEE 76/889/CEE.

Dit apparaat voldoet aan de vereisten van EEG-reglementen 76/889/EEG.

Apparatet opfylder kravene i EF direktivet 76/889/EF.

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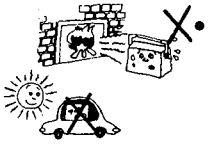
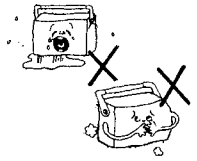
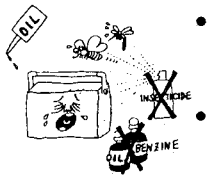
PRECAUTIONS



- Do not expose the unit to temperatures higher than 60°C (140°F). This includes leaving the unit inside closed vehicles, placing it in direct sunlight or in the vicinity of heaters, etc.



- Do not expose the unit to rain or moisture as this will result in damage to internal circuitry.
- Do not locate or store the unit for extended periods in places with high humidity or high concentrations of dust.



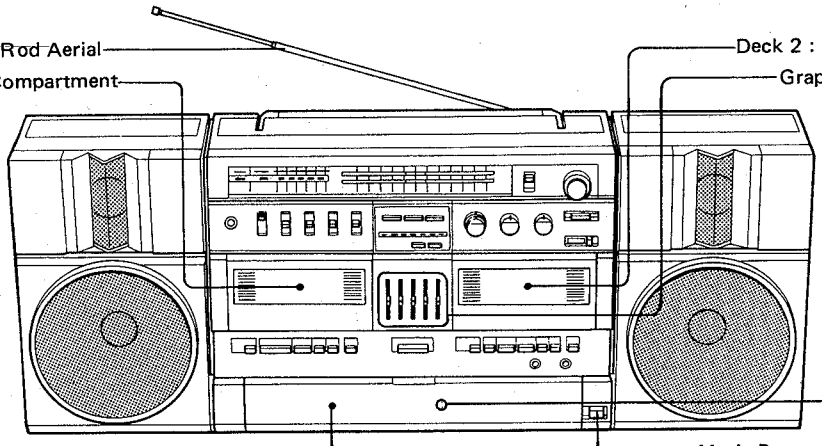
- Do not apply petroleum, any organic solvents, or insecticides to the cabinet surface, as this may result in cracking or other surface damage.
- Do not apply oil to any part of the unit.

- Be sure to hold the AC supply plug – NOT THE LEAD – when removing this plug from the AC outlet. Removing the plug by pulling the lead may result in damaged or broken connections.

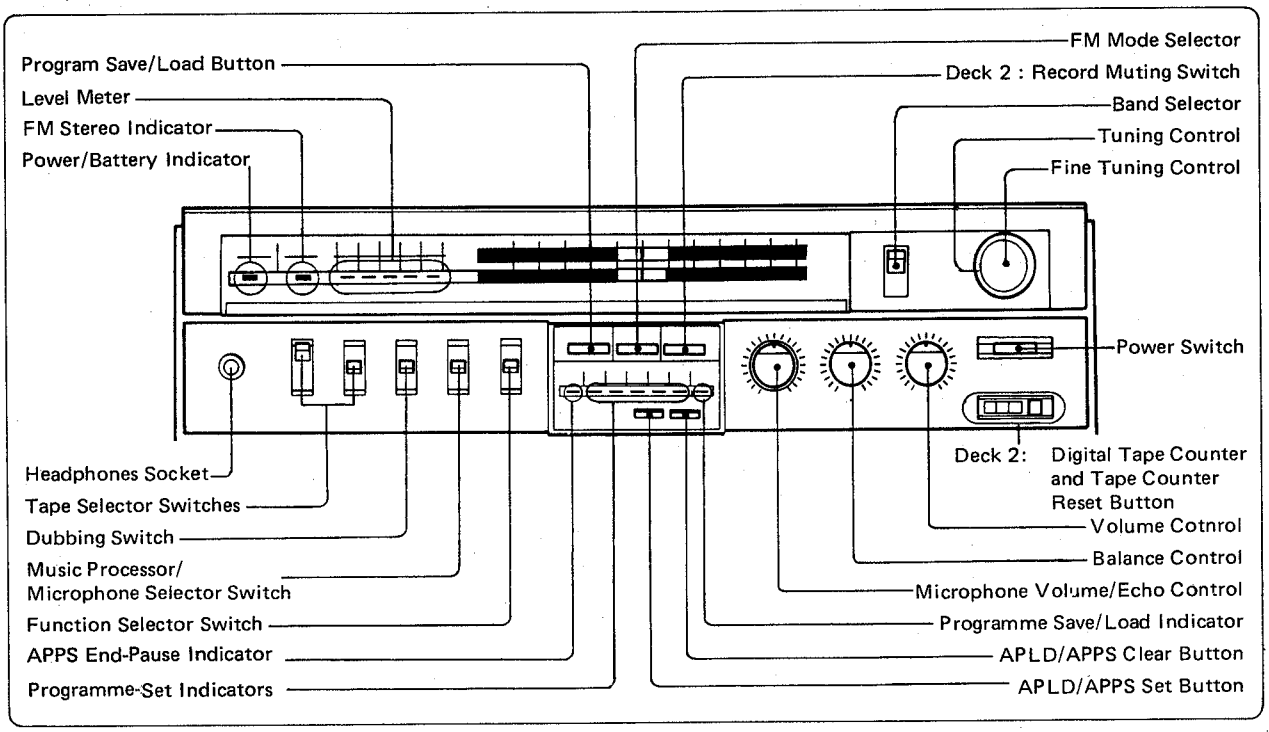
Warning:
Always remove mains plug from wall socket when not in use, or before any service operation. Never remove covers unless qualified to do so; this unit contains dangerous voltages.

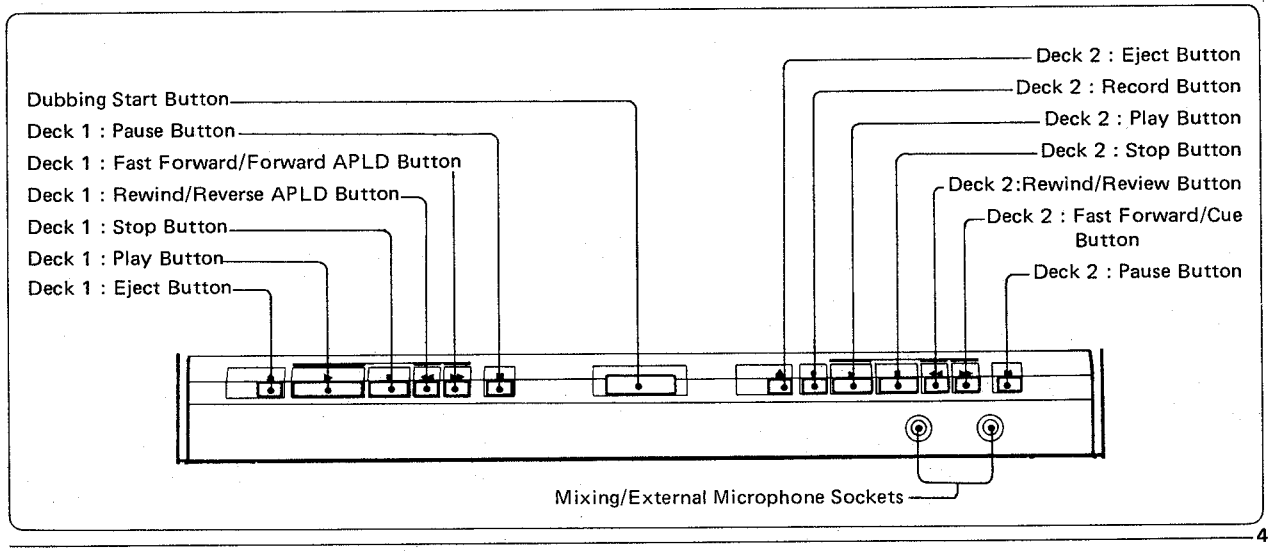
When the POWER switch is set at STAND-BY ⏻ position, the unit is on stand-by, which means that the current is cut off only secondarily. Accordingly, be sure to pull off the mains plug out of the wall outlet before making any internal examination or repairs.

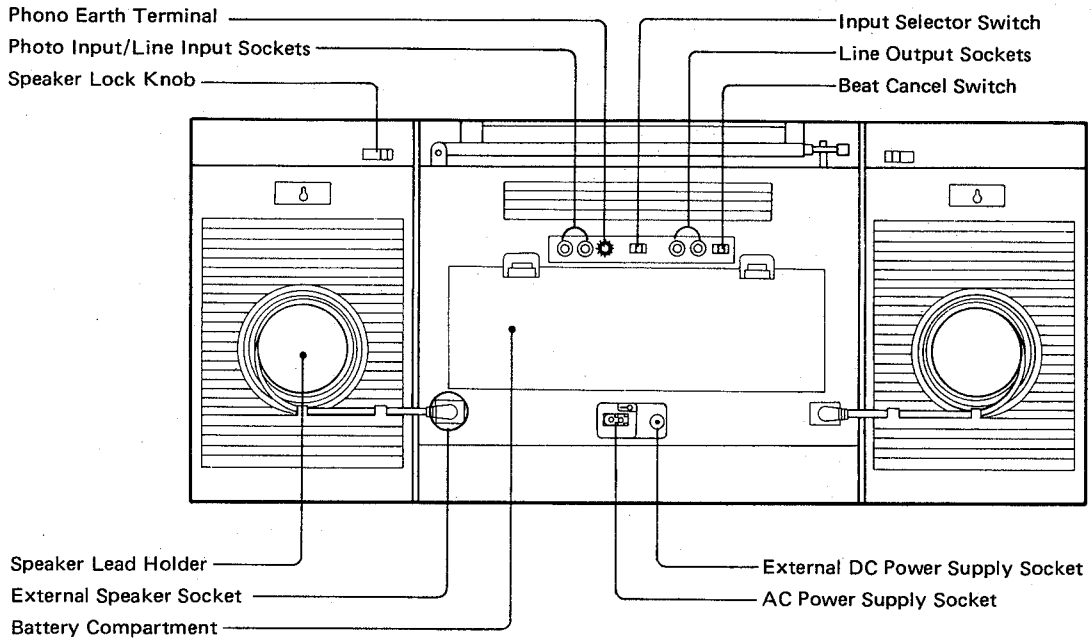
NAMES OF UNIT'S CONTROLS


FM/SW Telescopic Rod Aerial
Deck 1 : Cassette Compartment
Deck 2 : Cassette Compartment
Graphic Equalizer Controls
Music processor compartment
Music Processor Eject Button

For a description of the music processor, see pages 9 to 24.



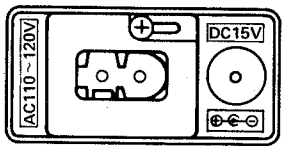

Dubbing Start Button
Deck 1 : Pause Button
Deck 1 : Fast Forward/Forward APLD Button
Deck 1 : Rewind/Reverse APLD Button
Deck 1 : Stop Button
Deck 1 : Play Button
Deck 1 : Eject Button
Deck 2 : Eject Button
Deck 2 : Record Button
Deck 2 : Play Button
Deck 2 : Stop Button
Deck 2:Rewind/Review Button
Deck 2 : Fast Forward/Cue Button
Deck 2 : Pause Button
Mixing/External Microphone Sockets



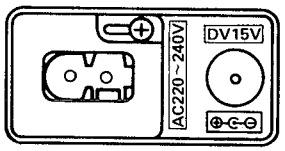
POWER SOURCE

1 AC SUPPLY VOLTAGE SELECTOR

Be sure to check the voltage setting of the voltage selector before connecting AC supply lead plug to the AC outlet. If necessary, adjust the setting as follows:



AC 110 ~ 120V



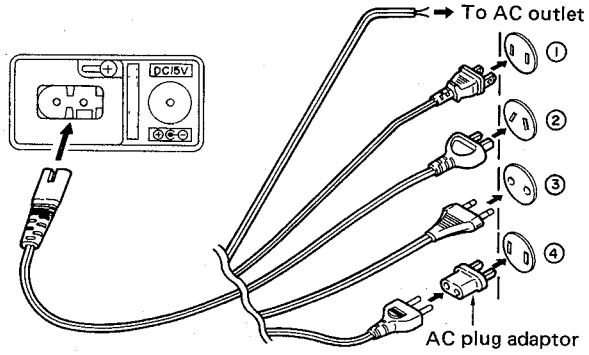
AC 220 ~ 240V

1. Loosen the securing screw of the supply voltage selector.
2. Slide the panel right or left, until the correct voltage reading is seen on either side.
3. Secure the screw.

- Do not use this unit with AC mains voltages other than those specified, as this may result in damage, fire, etc. SHARP may NOT be held responsible for damage resulting from use of this unit with unspecified voltages.

2 OPERATION FROM AC POWER SUPPLY

Connect the AC supply lead to the unit's AC power supply socket. Next, connect the AC supply lead plug to the AC outlet. Supply is either 100V ~ 120V or 220V ~ 240V.



- Inserting the AC supply lead into the unit automatically disconnects the batteries. As a result, the AC supply lead must be removed from the unit in order to operate the unit on battery power.
- An AC power supply should be used whenever possible in order to conserve battery power.

AC PLUG ADAPTOR

The AC plug adaptor can be used when, due to the difference in shapes between the AC wall outlet and the AC supply plug, a direct connection is impossible (See figure 4 at left). The AC plug adaptor is not included in areas where the AC wall outlet and AC supply plug can be directly connected (See figures 1, 2 and 3).

Note for users in Australia:

An AC plug adaptor is not included in units which are supplied with an AC cord fitted with the Australian Standard plug.

Disconnect the AC supply lead plug from the AC outlet when the unit is not in use for extended periods.

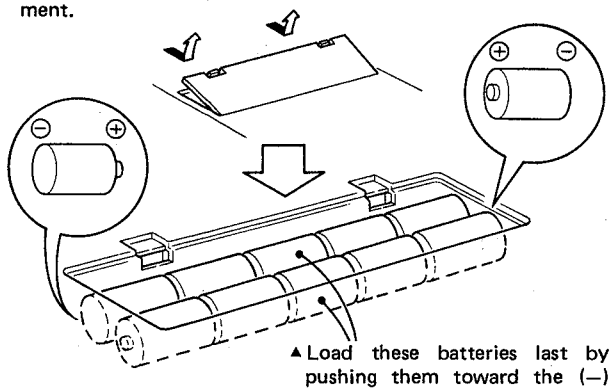
3 OPERATION FROM DC POWER SUPPLY: BATTERIES

- Disconnect the AC supply lead and car battery adaptor from the unit.
- Set the POWER switch to the STAND-BY ⏻ position.

■ BATTERY INSTALLATION

1. Please lay the unit face down on a soft cloth so as not to damage the unit.
2. Remove the battery compartment cover.
3. Load ten new batteries (1.5V cell x 10) — UM/SUM-1, R 20, HP-2 or D type — into the compartment.

- Battery polarity and location are shown inside the compartment.

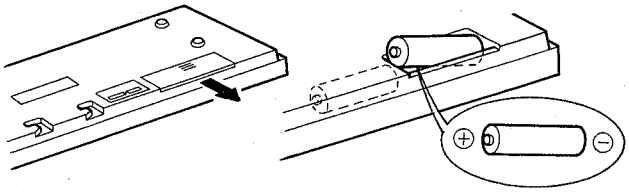


▲ Load these batteries last by pushing them toward the (—) terminal.

4. Replace the battery compartment cover. The unit is now ready for internal battery power supply operation.

■ BATTERY INSTALLATION OF MUSIC PROCESSOR

1. Remove the battery compartment cover of the music processor.
2. Load two new batteries (1.5V cell x 2) — UM/SUM-3, R6, HP-7 or AA type — into the compartment.



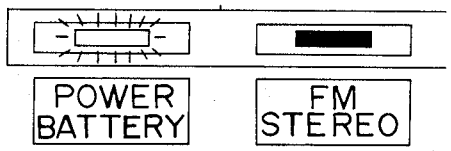
3. Replace the battery compartment cover.
4. Push the MEMORY CLEAR button before operating the music processor.

NOTES

- If there are no batteries in the unit, or if the batteries are weakened, the music processor may not operate correctly when the POWER switch is in the ON position.
- If the batteries are weakened, or the POWER switch is in the STAND-BY ⏻ position, the digital informations memorized by the music processor will not be held. Replace with new batteries as soon as possible.

■ BATTERY LEVEL CHECK

The POWER/BATTERY indicator shows whether or not the DC power supply is adequate for unit operation.

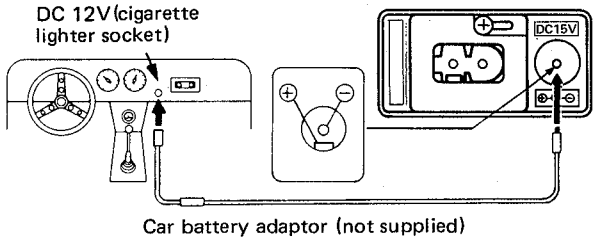


1. Set the POWER switch to the ON position.
2. Turn the VOLUME control to the MIN position.
3. Depress the PLAY ▶ button of either Deck 1 or Deck 2.
4. Battery level is adequate if the POWER/BATTERY indicator illuminates. It is inadequate if this indicator is either dim or does not illuminate. In this case new batteries should be installed.

NOTES:

- Remove the batteries when they become weak or when the unit is not in use for extended periods. This will prevent damage to the unit from battery leakage at such times.
- Be sure to keep battery contact parts clean. Dust accumulations between batteries and battery terminals may result in imperfect contacts, and may even prevent the unit from operating.
- When batteries are weakened, recording sometimes becomes impossible, even though radio broadcasts may be audibly received. Batteries should be replaced at once.

4 OPERATION FROM DC POWER SUPPLY: CAR BATTERY



Car battery adaptor (not supplied)

This unit can be operated in cars with a DC 12V battery and a negative ground. For this purspose, use a car battery adaptor available in the audio shop.

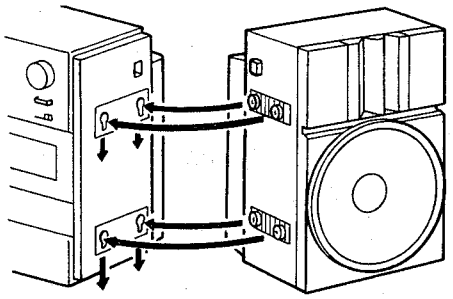
Attach the car battery adaptor as shown at left.

- Use of an external DC power source will automatically disconnect the internal batteries.

SPEAKER BOX

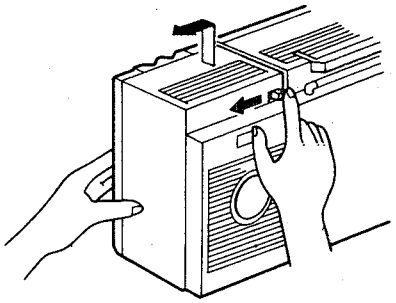
■ HOW TO MOUNT SPEAKER BOXES

Insert the four fittings on the speaker box into the holes on the unit as shown on the diagram, and push down the box to let it lock automatically.



■ HOW TO DISMOUNT SPEAKER BOXES

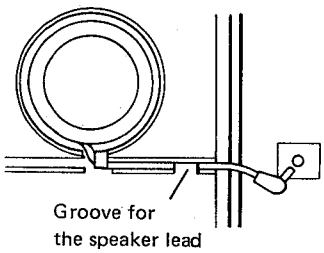
To unlock the speaker, slide the speaker release knob on the back of the speaker box in the direction as shown, and then lift the box slightly to remove it from the main unit while holding the speaker release knob.



■ HOW TO TAKE OUT AND STORE THE SPEAKER LEAD

To Take Out:

1. Unwind the speaker lead so that it reaches the external speaker socket.
2. After threading the lead neatly through the groove for the speaker lead, connect the plug to the external speaker socket.



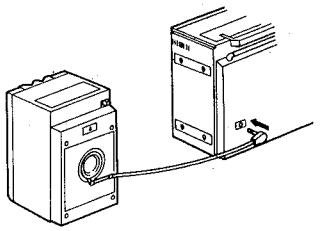
To Store:

Disconnect the plug from the external speaker socket, and wind the lead on the speaker lead holder.

When storing the speaker lead, wind it tightly on the holder. If wound loosely, the lead may not be stored completely on the holder.

How to use speakers separated from the unit

- After extending the desired length of the speaker lead, connect the plug to the external speaker socket.

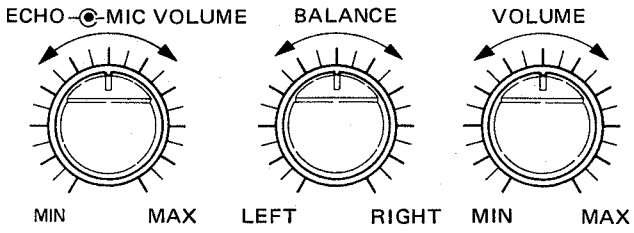


■ CORRELATION BETWEEN SPEAKERS AND UNIT

- The speakers' maximum input power is 20W. If you intend to use this speaker system with an amplifier which is not part of this system, do not connect the speakers to an amplifier with a maximum output power of more than 20W, as this may cause damage to the speakers.
- If you wish to connect any of the speakers currently being sold on the market to this unit, please select speakers with at least 3.2 ohms impedance. Connecting speakers with less than 3.2 ohms impedance to the unit may damage the electric circuitry in the amplifier section of the unit.

HOW TO ADJUST SOUND

■ VOLUME, BALANCE, MIC VOLUME AND ECHO CONTROLS



VOLUME CONTROL:
Turn the VOLUME control to adjust sound to the desired level. Turning the VOLUME control to the right increases the volume.

BUILT-IN LOUDNESS CIRCUIT:
When listening to the radio or a tape at low volume settings, the built-in loudness circuit is activated to compensate for bass and treble deficiencies.

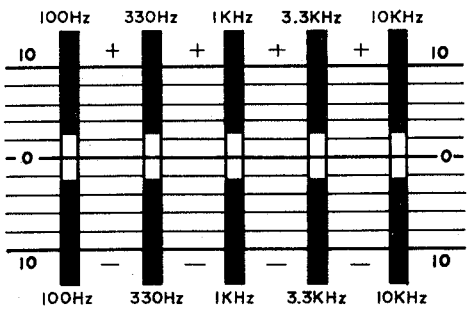
BALANCE CONTROL:
Controls the balance of right and left speaker volume.

MIC VOLUME CONTROL:
Turn the inner MIC VOLUME control to adjust the microphone level. Turn the MIC VOLUME control to the right to increase the microphone level.

ECHO CONTROL:
Turn the outer ECHO control to the right to increase the echo effect in voice or sound of the mixing microphone or music processor.

■ GRAPHIC EQUALIZER CONTROLS

Graphic equalizer is a device by which you can change tone quality of a sound by compensating its frequency characteristic. This tape recorder is equipped with five controls to cover five different frequency ranges: 100 Hz, 330 Hz, 1 kHz, 3.3 kHz, and 10 kHz. By controlling the levels of each range, sounds with any frequency characteristics desired may be reproduced by this tape recorder.



- Slide the control knob for a specific range upward (toward + 10 position) to emphasize the sounds in that particular range.
- Slide the control knob for a specific range downward (toward −10 position) to diminish the sounds in that particular range.
- By setting all GRAPHIC EQUALIZER controls to the centre position (0), the frequency responses will become flat.

100 Hz
This is the sound range that will bring out the facinating bass sounds of such instruments as bass guitars or drums. Slide the control knob upward and a more composed and massive sound quality will be obtained. If the reproduced sounds are opaque or cloudy in the lower frequencies, slide the knob downward and more clear-cut sounds will be obtained.

330 Hz
This is the range that covers human voices and basic sounds of music. Slide the knob upward and human voices will be emphasized with a more punch put into.

1 kHz
This range affects the middle register which is higher than the 330 Hz range. By sliding the knob upward, sounds from a piano or brass instruments, or high human voices will be emphasized with full life.

3.3 kHz
Sounds in this range are stimulative to human ears. Slide the knob upward and sounds from string instruments will be reproduced to give a brilliant and spirited feeling. When the reproduced sounds are too poignant to your ears, slide the knob downward so that milder and mellower sounds will be reproduced.

10 kHz
The clear sonance of the upper register of cymbals and triangles is emphasized by sliding this knob upward. Slide the knob downward to reduce tape hiss noises.

NAMES AND EXPLANATION OF MUSIC PROCESSOR CONTROLS

ACCOMPANIMENT VOLUME Control
Ajust the volume level of accompaniments (rhythm or chords).

TEMPO Control
Adjust the tempo of accompaniment or molody.

PITCH Control
Adjust the melodic interval of accompaniments and melody.

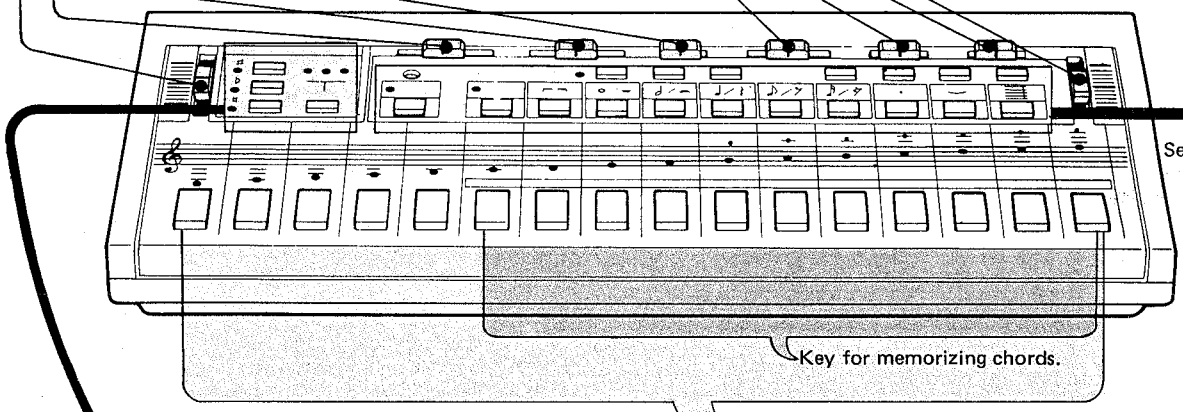
OCTAVE Selector Switch
When the MODE selector switch is in the PLAY or MEMORY (SAVE) position, slide this switch to the +1 OCTAVE position, and the musical scale is raised one octave.

RHYTHM Selector Switch
Selects 4 different rhythms — waltz, swing, rock or beguine.

TONE Selector Switch
Three tones can be selected:
I ··· A clear, crisp tone (1 octave lower than III),
II ··· A smooth tone (1 octave higher than III),
III ··· Soft tone.

MODE Selector Switch
PLAY: Set to this position for manual playback of music.
AUTO PLAY (LOAD): Set this position for auto-playback of music, or for memorizing digital information on cassette tape in music processor (programme load).
MEMORY (SAVE): Set this position for memorizing music data in music processor, or for recording memorized music data as digital information on cassette tape (programme save).

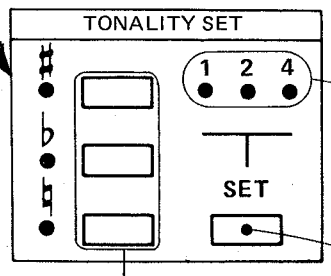
MELODY VOLUME Control
Adjust the volume level of melody.



See page 10.

Key for memorizing chords.

Musical Scale Keys
Used for manual playback and memorizing music data. When the keys are pressed, an indicator showing the position on the musical scale lights up.



TONALITY SET Indicators
Indicates the number of sharps (♯) or flats (♭) which have been set.

TONALITY SET Keys
When making tonality settings, press according to the number of sharps (♯) or flats (♭) desired. A natural(♮) key is also provided. Can also be used for accidentals in middle of the sheet music. To clear tonality setting, press natural(♮) key.

SET Key
Press before and after tonality setting.

MEMORY CLEAR Button
Press to erase all digital informations memorized by music processor.

CORRECT Key
Press before and after correcting, deleting or adding digital information.

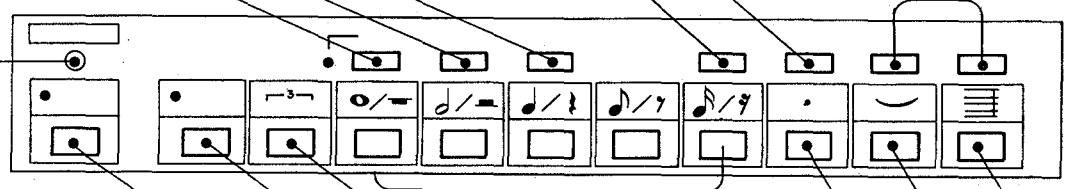
DELETE Key
Press after using CORRECT key to delete part of the digital information.

ADDITION Key
Press after using CORRECT key to add other digital information to ones already input.

STOP Key
Press to stop automatic playback of music, or to stop the programme loading.

START Key
Press to start automatic playback of music, or to start rhythm for manual playback of music.

RECALL MEMORY Keys
Press to call out digital informations one by one.
BACK: Goes back to previous digital information each time it is pressed.
FOR: Goes forward to next digital information each time it is pressed.



CHORD SET Key
Press before and after memorizing chord signatures.

REST Key
When memorizing rest signatures. Press the note/rest key after pressing this key.

TRIOLE Key
Press for memorizing triole.

Note/Rest Keys
Press to memorize the length of notes or rests.

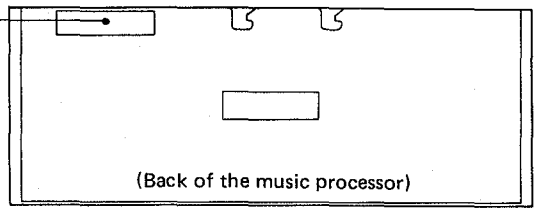
Dot Key
Press after using the note/rest key, when memorizing dotted notes or dotted rests.

TIE Key
Press to memorize tie signature.

Single Bar Key
Press to memorize single bar signature.

Battery Compartment
Install two new batteries (2 x 15V cells) — UM/SUM-3, R6 HP-7 or AA type — in the battery compartment.

- The digital information memorized in the music processor is protected by the batteries even though the unit's POWER switch is set to the STAND-BY ⏻ position.
- The life of the batteries is approx. 12 months.



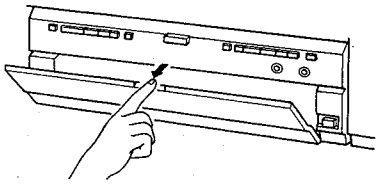
MUSIC PROCESSOR

CAUTION

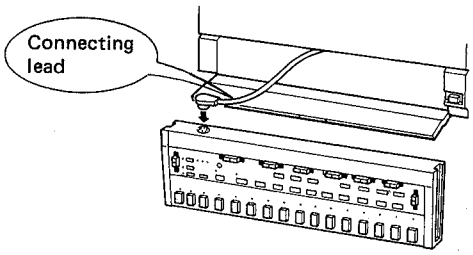
Be sure to connect or disconnect the connecting lead of the music processor after pushing the MUSIC PROCESSOR switch to the OFF position.

■ HOW TO CONNECT THE MUSIC PROCESSOR

1 Open the music processor compartment cover by pulling forward, and remove the tape fixed to the connecting lead. Then pull out the connecting lead from the compartment.

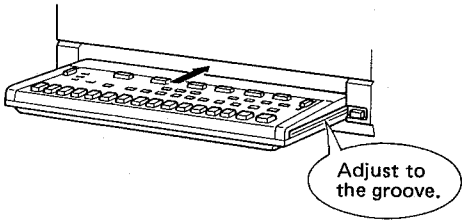


2 Turn upwards the side indicated by the arrow on the connecting lead, and connect it to the socket at the back of the music processor.



3 Insert the music processor by sliding it into the inside groove of the compartment.

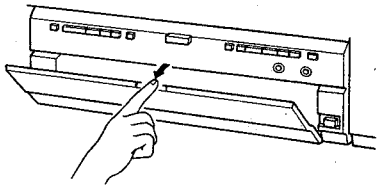
- After hearing it click to be locked, close the music processor compartment cover.



- Do not put any object except the music processor and connecting lead into the music processor compartment.

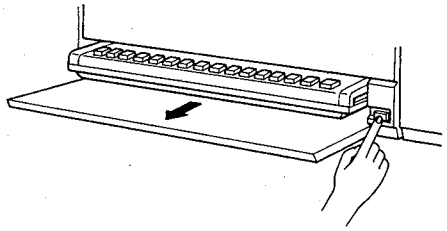
■ HOW TO TAKE OUT THE MUSIC PROCESSOR

1 Open the music processor compartment cover by pulling forward.

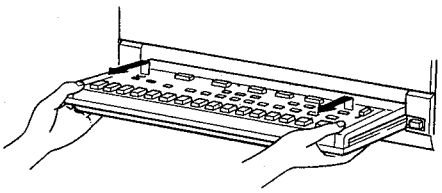


2 Depress the music processor EJECT button.

- This button can not be depressed unless the compartment cover is open.

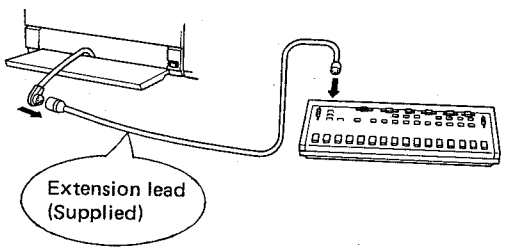


3 To remove the music processor, pull the music processor forward as shown in the figure.



Using the extension lead

Connect the extension lead as shown in the figure.



- The extension lead can not be put into the compartment when connected to the connecting lead.

When transporting the speakers or music processor mounted in the unit

Please follow the instructions described on the right so that the speakers leads are not caught and music processor does not become detached.

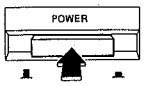
1 Be sure to mount the speakers properly.
2 Hang the speaker leads onto the lead hook after winding the lead so that it is not loosened.
3 Be sure to check if the music processor is mounted in the music processor compartment properly.

NOW LET'S PLAY THE MUSIC PROCESSOR (MANUAL PLAYBACK)

Insert the batteries into the music processor battery compartment. After inserting the batteries, be sure to press the MEMORY CLEAR button.

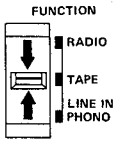
If there are no batteries in the battery compartment, or if the batteries are weakened, the music processor may not operate correctly when the POWER switch is in the ON position.

1



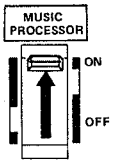
Push the POWER switch of the unit to the ON position.

2

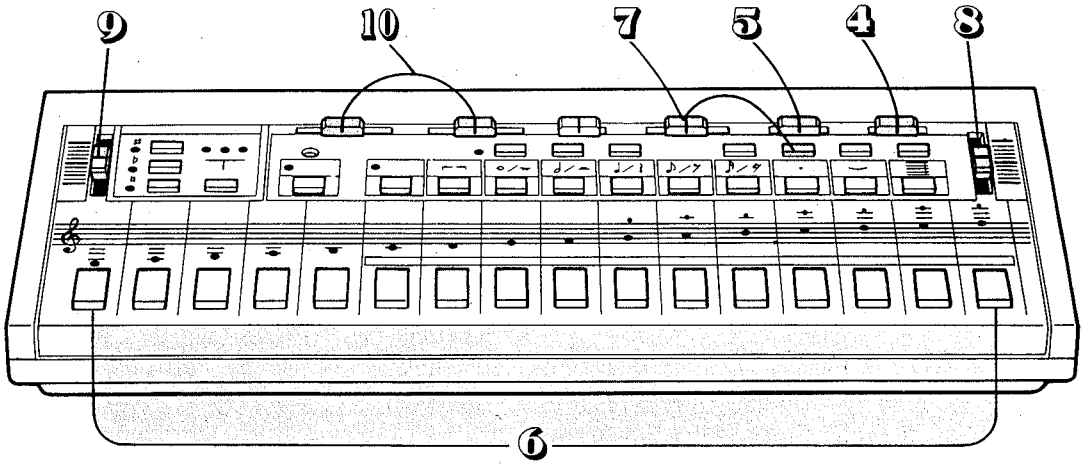


Slide the FUNCTION switch to the TAPE position.

3



Slide the MUSIC PROCESSOR switch to the ON position.



4 Slide the MODE selector switch to the PLAY position.

5 Slide the TONE selector switch to the appropriate position.
I ··· A clear, crisp tone (1 octave lower than III).
II ··· A smooth tone (1 octave higher than III).
III ··· Soft tone.

6 Let's press the music scale keys. The indicator for the scale key pressed, lights up, and the sound chosen is heard.
Let's try another sound.

- If more than 2 scale keys are pressed simultaneously, the sound is heard from the leftmost key.
- For tone II, the sound is heard for as long as the scale key is pressed, but for tones I and II the sound does not continue even if the scale key is kept depressed.

7 Slide the RHYTHM selector switch to the desired rhythm position. Then press the START key.
The WALTS position gives 3/4 time, and the other positions 4/4 time. (Refer to instructions on page 21.)

- To change the rhythm, slide the RHYTHM selector switch to the desired rhythm position and press the START key.
- To stop the rhythm, slide the RHYTHM selector switch to the OFF position.

8 Adjust the MELODY VOLUME control.

9 Adjust the ACCOMPANIMENT VOLUME control with regard to balancing the melody volume level.

10 Adjust the tempo of the rhythm with the TEMPO control, and adjust the pitch of the melody with the PITCH control.

11 Adjust the VOLUME, BALANCE and GRAPHIC EQUALIZER controls of the unit. (Refer to instructions on page 8).

When the music processor does not operate even though the music processor's keys are pressed, or if many indicators are illuminated.

Set the MUSIC PROCESSOR switch to the OFF position, and then it to the ON position again. If the music processor still does not operate, switch it to the OFF position again, remove the batteries from the music processor battery compartment and leave for 3 – 4 minutes.
Insert the batteries in the battery compartment again, and set the MUSIC PROCESSOR switch of the unit to the ON position.
The music processor should then function normally.
This phenomenon is a particularity of the micro-computer, and does not indicate a fault.

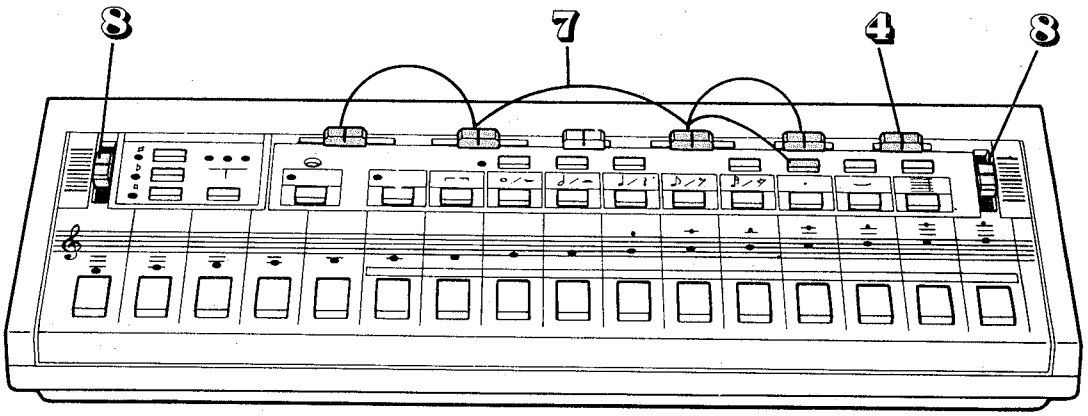
AUTOMATIC PLAYBACK WITH ACCESSORY TAPE

The songs "Entertainer" and "Clementine" are recorded on the accessory cassette tape as digital informations.
Let's put these digital informations into the music processor (programme load), and play them back automatically.

1 Push the POWER switch of the unit to the ON position.

2 Slide the FUNCTION switch to the TAPE position.

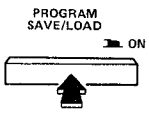
3 Slide the MUSIC PROCESSOR switch to the ON position.



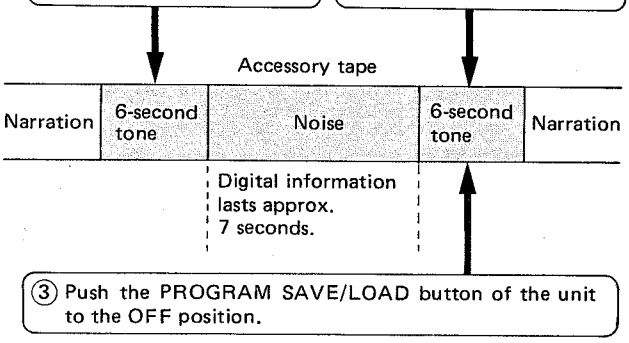
4 Slide the MODE selector switch to the AUTO PLAY (LOAD) position.

5 Playback the cassette tape on the unit (refer to instructions on page 27).

6 ① As soon as a whistle is heard, push the PROGRAM SAVE/LOAD button of the unit to the ON position. When the tone becomes weaker, programme loading begins in the music processor.



② Two sharps (♯) are used in the sont "Entertainer" on the cassette tape. Programme loading is complete when TONALITY SET indicator 2 illuminates. As for "Clementine", one sharp (♯) is used. Programme loading is complete when TONALITY SET indicator 1 illuminates.



③ Push the PROGRAM SAVE/LOAD button of the unit to the OFF position.

7 Adjust TEMPO, PITCH controls, RHYTHM and TONE selector switches as desired. Then press the START key. The music processor plays automatically illuminating the indicators.
- To change the rhythm, press the STOP key to stop play, then slide the RHYTHM selector switch to the desired position and then press the START key.
- The TEMPO, PITCH controls and TONE selector switch can be adjusted or selected during automatic playback.

8 Adjust the ACCOMPANIMENT VOLUME and MELODY VOLUME controls.
- The OCTAVE selector switch cannot be selected during automatic playback.

Only one song can be programme loaded into the music processor at a time:

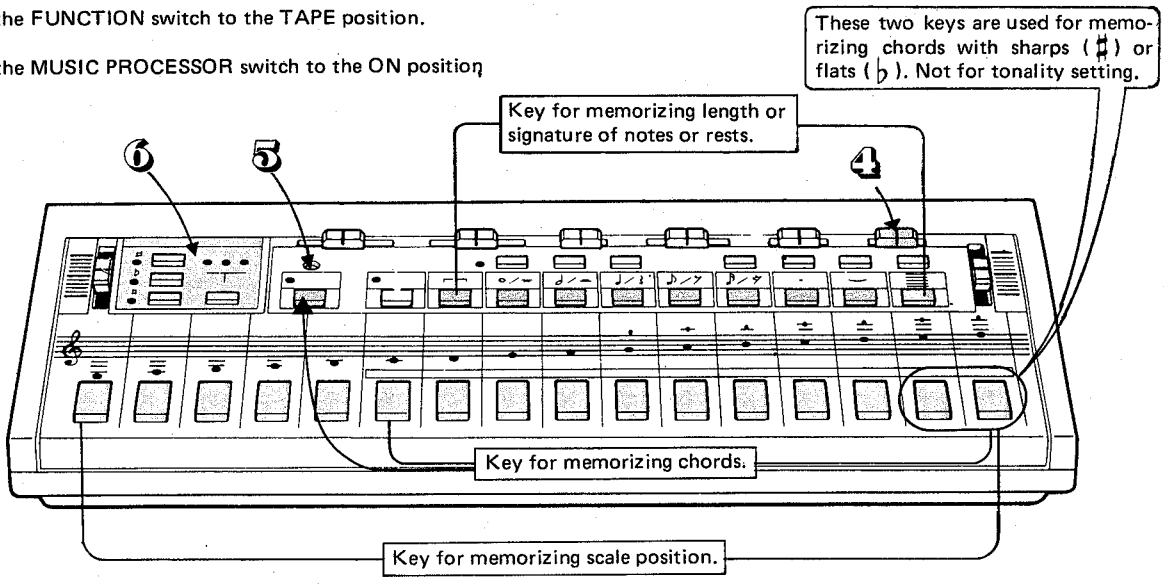
When programme loading is complete and the whistle tone is heard, push the PROGRAM SAVE/LOAD switch to the OFF position.

- Digital informations (programme load) can be fed in the music processor from either Deck 1 or Deck 2. However, do not operate the Deck that is not being used, as programme loading cannot take place if both decks are operated simultaneously.
- If programme loading is not satisfactory, slide the MUSIC PROCESSOR switch of the unit to the OFF position, and then it to the ON position. Following this, repeat operations from step 4 onwards.

MEMORIZATION OF MUSIC DATA AND AUTOMATIC PLAYBACK

1 TO MEMORIZE

1. Push the POWER switch of the unit to the ON position.
2. Slide the FUNCTION switch to the TAPE position.
3. Slide the MUSIC PROCESSOR switch to the ON position.

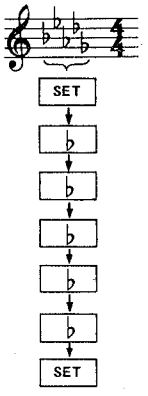

These two keys are used for memorizing chords with sharps (♯) or flats (♭). Not for tonality setting.
Key for memorizing length or signature of notes or rests.
6
5
4
Key for memorizing chords.
Key for memorizing scale position.

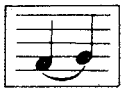
4. Slide the MODE selector switch to the MEMORY (SAVE) position.
5. Press the MEMORY CLEAR button.
   (About 2 seconds later, all the memories are cleared.)
6. Set the keys for memorizing sheet music.
   1. Press the SET key.
   2. Press the sharp (♯) or flat (♭) key according to the number of sharps (♯) or flats (♭).
      - The TONALITY SET indicator illuminates the number of times the keys have been pressed.

1	2	3	4	5	6	7
1 2 4	1 2 4	1 2 4	1 2 4	1 2 4	1 2 4	1 2 4
☼ ● ●	● ☼ ●	☼ ☼ ●	● ● ☼	☼ ● ☼	● ☼ ☼	☼ ☼ ☼

      - If the setting has been mistaken or it is desired to change the setting, press the natural (♮) key, and then make the correct setting.
   3. After tonality setting is completed, press the SET key.
      - If the SET key is not pressed, operations other than tonality setting can not be performed.
      - It is unnecessary to make tonality settings for songs without any sharps (♯) or flats (♭) signature.

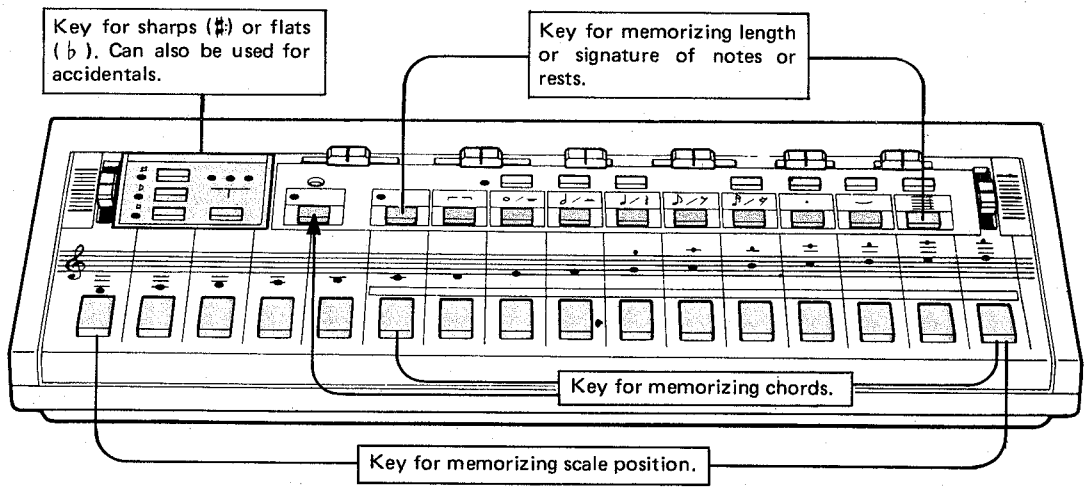
e.g. if there are r-flats (♭)



7. To memorize melody and chords from left to right, top to bottom as on sheet music.
   NOTE —— Press in the order: Scale position key → length key.
   REST —— Press in the order: [REST] key → length key.
   CHORD —— Press in the order: [CHORD SET] key → chord name → [CHORD SET] key.
   TIE —— Press the [⌣] key immediately after the first note of the pair.
   SINGLE BAR —— Press the single bar key.
   - For dot-note or dot-rest signature, press the [•] key after the note or rest length key.
   - When there are triole, press in the order: Scale position or rest key → [TRIOLE] key → length key.
   - When the scale positions of the notes are different as shown at right, do not memorize even if there is a slur (⌣).
     If the notes are memorized, they are played as during automatic playback.

The memory has a capacity of 340 in terms of notes and rests (chords, ties and single bars are not counted).
(Songs with a change of tempo in the middle, cannot be memorized.)

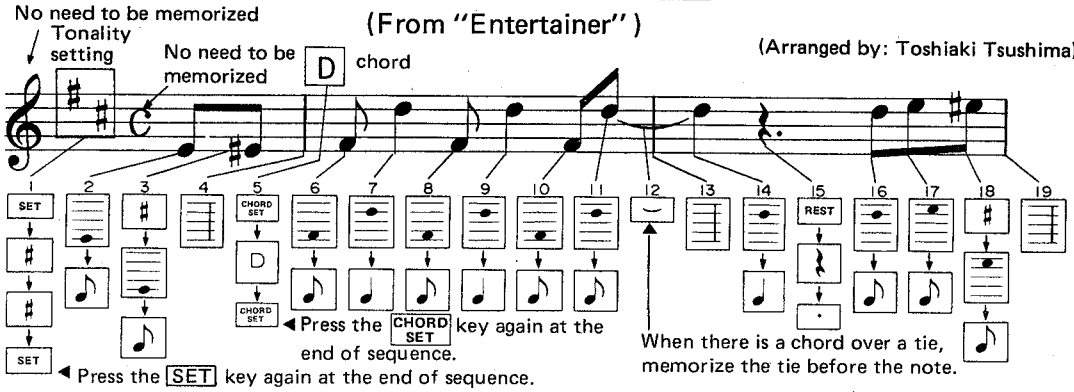
- When the memory is saturated, no sound will be heard even if the scale keys are pressed, and the indicator will not light.

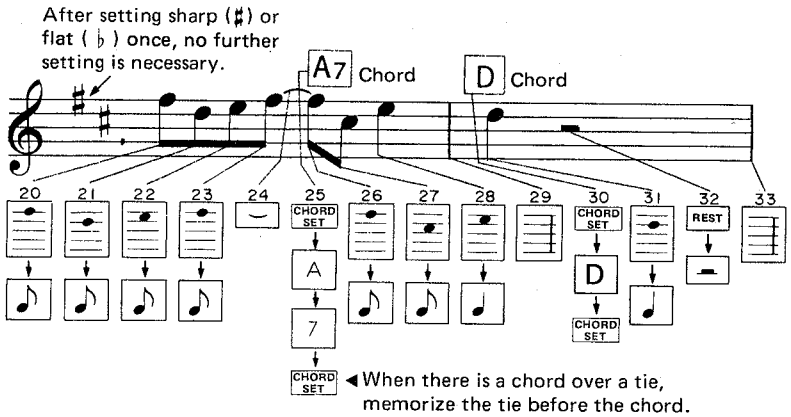
EXAMPLES Memorizing while looking at sheet music


Key for sharps (♯) or flats (♭). Can also be used for accidentals.
Key for memorizing length or signature of notes or rests.
Key for memorizing chords.
Key for memorizing scale position.

(From "Entertainer")

(Arranged by: Toshiaki Tsushima)


No need to be memorized
Tonality setting
No need to be memorized
D chord
SET
CHORD SET
REST
◀ Press the CHORD SET key again at the end of sequence.
◀ Press the SET key again at the end of sequence.
When there is a chord over a tie, memorize the tie before the note.

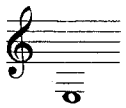
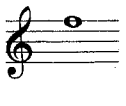

After setting sharp (♯) or flat (♭) once, no further setting is necessary.
A7 Chord
D Chord
CHORD SET
REST
◀ When there is a chord over a tie, memorize the tie before the chord.

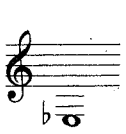
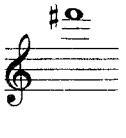
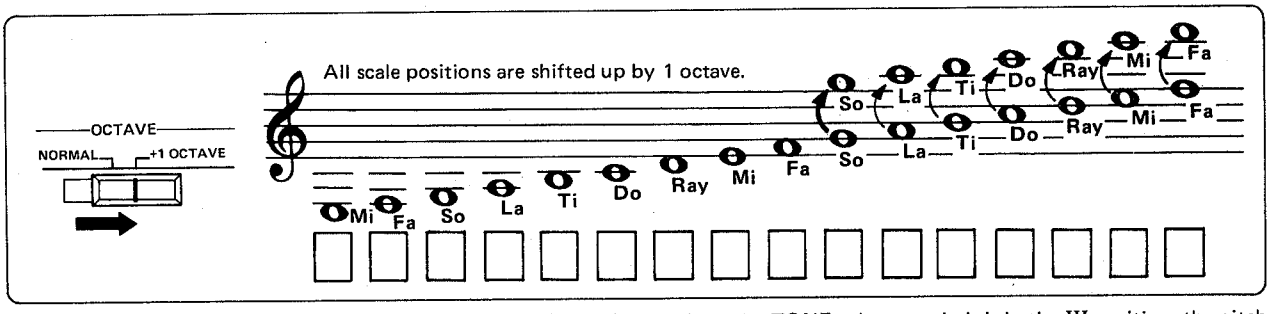
- If the tonality setting is memorized at the beginning, there is no need to memorize it in the middle of the sheet music.
- No more than second signatures of a chord can be memorized.
- Once a chord has been memorized, it continues until the next chord is memorized.

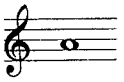
For the various signatures used in sheet music, see pages 21 to 24.

- When there are accidentals (♯, ♭, ♮) in the middle of the sheet music, scale position or notes may be memorized by pressing sharp (♯), flat (♭) or natural (♮) key.
  Note, however, that the sound obtained when the scale key is first pressed to memorize, is not shifted up or down by a semitone.
- When memorizing accidentals, the same note, or a note higher or lower by one octave is present in the same bar, the notes concerned will be automatically shifted up or down by one semitone. However, even in the same bar, when RECALL MEMORY keys are called out one by one, all notes after the second are heard as they were before the semitone shift.

■ SCALE POSITION

The scale of the music processor extends from to .

For notes on sheet music which are higher than this scale, slide the OCTAVE selector switch to the +1 OCTAVE position. The music processor scale keys will then be shifted up by one octave. Using the OCTAVE selector switch, 23 scales are available.

If sharps (♯) and flats (♭) are also used, the scale of the music processor then actually extends from to .



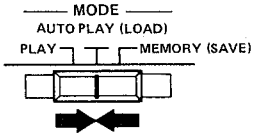
- When memorizing notes 1 octave higher, the sound heard is the same as that when memorizing without raising the octave.
- After memorizing notes one octave higher, be sure to slide the OCTAVE selector switch to the NORMAL position.
- When the TONE selector switch is in the III position, the pitch of the music processor (PITCH control in the centre position) sets to approx. 440Hz.

  However, this note cannot be used as a standard for musical instruments.

■ SINGLE BAR

Single bars are required only at the beginning (for synchronizing rhythm), and in the middle of tunes following notes with sharps (♯), flats (♭) and natural (♮) (for accidentals). For other single bars, there is no need to memorize.

2 LET'S CHECK WHETHER WE'VE MEMORIZED THE TUNE CORRECTLY

1. Press the START key. Only the memorized melody is heard.
2. While listening to the melody and watching the indicator, compare with sheet music.
   If the TEMPO control is slided to the SLOW position, comparison is easier.
3. If some mistakes were made when memorizing, see pages 18 to 20 for "CORRECTION, DELETION AND ADDITION OF MEMORIZED MUSIC DATA".
4. To add the accompaniment (rhythm and chords) slide the MODE selector switch to the AUTO PLAY (LOAD) position and press the START key.



RECORDING FROM MUSIC PROCESSOR TO DECK 2

There are two methods for recording from the music processor to Deck 2, and either may be used as desired.

1 Recording automatic playback of music on the music processor to Deck 2.
- In this case, rhythm and tempo can be applied to the music as it is playing back automatically, but cannot be applied when the tape is played back.

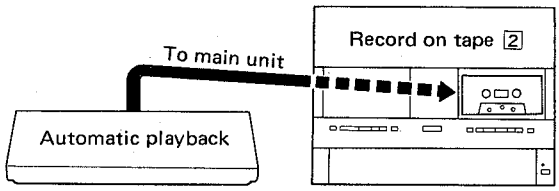
2 Recording music data memorized by the music processor on Deck 2.
- In this case, no music is heard even when the tape is played back. In order to convert the digital informations into music, it must be loaded into the music processor and played back automatically with rhythm and tempo.

PROGRAM SAVE/LOAD

PROGRAM SAVE
Recording of music data memorized by the music processor as digital informations on Deck 2.

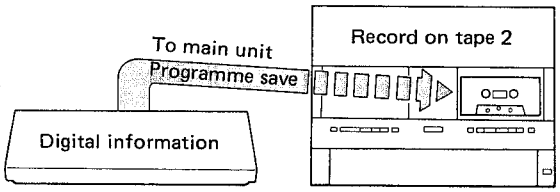
PROGRAM LOAD
Memorizing by the music processor from Deck 2, of digital informations recorded on cassette tape.

1 TO RECORD AUTOMATIC PLAYBACK OF MUSIC WITH MUSIC PROCESSOR, ON DECK 2



1. Push the POWER switch of the unit to the ON position.
2. Slide the FUNCTION switch to the TAPE position.
3. Slide the MUSIC PROCESSOR switch to the ON position.
4. Perform steps 1 to 5 of "RECORDING FROM THE BUILT-IN RADIO" on page 30.
5. Depress the PAUSE II button of Deck 2 to release it. Then start automatic playback on the music processor.
   - To listen to the recording on the tape, see page 27.

2 TO RECORD DIGITAL INFORMATIONS ON DECK 2



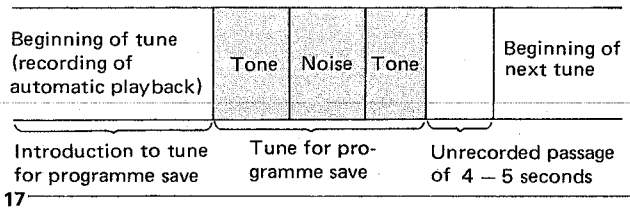
- To stop programme save, press the STOP key of the music processor. While the tone is heard, however, programme save cannot be stopped even if the STOP key is pressed.
- Programme save cannot be executed while the CORRECT indicator of the music processor is illuminated, while making tonality settings or during automatic playback.

NOTE

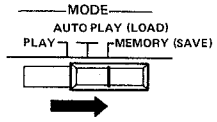
When dubbing digital informations from one cassette tape to another, load the programme into the music processor and then execute programme save with the second tape.

■ TO EXECUTE PROGRAMME SAVE, FIRST RECORD THE INTRODUCTION TO THE TUNE AS FOLLOWS.

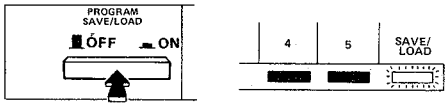
After executing programme save, leave an unrecorded passage of 4 – 5 seconds.
This makes it easier to recognize the tunes recorded on the tape, and also makes it possible to apply the APLD/APPS function.



1. Push the POWER switch of the unit to the ON position.
2. Slide the FUNCTION switch to the TAPE position.
3. Slide the MUSIC PROCESSOR switch to the ON position.
4. Slide the MODE selector switch of the music processor to the MEMORY (SAVE) position.



5. Perform steps 1 to 5 of RECORDING FROM THE BUILT-IN RADIO on page 30.
6. Depress the PAUSE II button to release it.
7. Push the PROGRAM SAVE/LOAD button to the ON position. The SAVE/LOAD indicator illuminates.

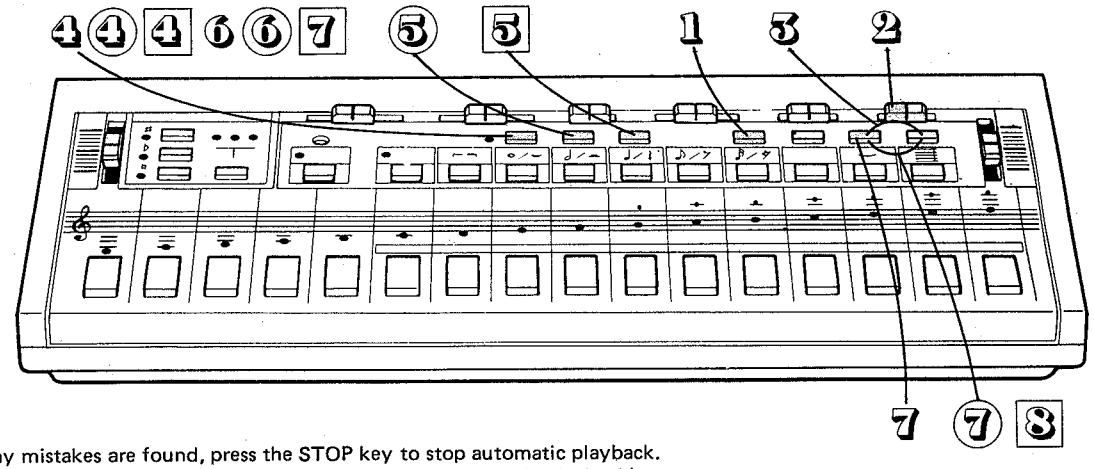


8. Faint sounds, i.e. tone. . .noise. . .tone. . . are heard, and recording of digital information is complete in approx. 20 seconds.
9. Depress the STOP ■ button of Deck 2, then push the PROGRAM SAVE/LOAD button to the OFF position. The SAVE/LOAD indicator goes off.
   - For automatic playback on the music processor, see page 13.

NOTE

While executing programme save, do not operate Deck 1, otherwise programme save will not be executed correctly.

CORRECTION, DELETION AND ADDITION OF MEMORIZED MUSIC DATA



1 If any mistakes are found, press the STOP key to stop automatic playback.
(Check the length of notes and rests by listening to automatic playback).

2 Slide the MODE selector switch to the MEMORY (SAVE) position (all indicators go off).

3 Press the RECALL MEMORY keys (BACK key or FOR key), and call out the digital music data one by one.
The notes called are displayed on the scale indicators, rests on the rest indicators and chords on the chord indicators.

■ TO MAKE CORRECTIONS

4 Call the note to be corrected, and press the CORRECT key.

5 Memorize the correct notes, rests or chords.

6 Press the CORRECT key. The CORRECT indicator goes off and correction is then complete.

7 Press the BACK key to check the notes, rests or chords which have been corrected.

- If it is desired to make corrections to music data while memorizing, be sure to press the FOR key before continuing to memorize.

■ TO MAKE DELETIONS

4 Call the note to be deleted, and press the CORRECT key.

5 Press the DELETE key.

6 After 2 – 3 seconds, press the CORRECT key. The CORRECT indicator goes off and deletion is then complete.

7 Press the BACK key to check the notes, rests or chords immediately before the deleted notes. Next, press the FOR key to check the notes, rests or chords immediately following the deleted notes, etc.

■ TO MAKE ADDITIONS

4 Call the notes, rests and chords immediately following the position where it is desired to make an addition, and press the CORRECT key.

5 Press the ADD key.

6 Memorize the notes, rests or chords to be added.

7 Press the CORRECT key. The CORRECT indicator goes off and correction is then complete.

8 Press the BACK key to check the notes, rests or chords immediately before the added notes. Next, press the FOR key to check the notes, rests or chords which have been added.

It takes a short time to add music data. After executing addition operations, wait 2 – 3 seconds before pressing the RECALL MEMORY keys (BACK key or FOR key).

EXAMPLE

- **IF THE WRONG KEY IS PRESSED WHILE MEMORIZING MUSIC DATA**

1. **If the wrong music scale key is pressed while memorizing notes:**
   Press keys in the order: [CORRECT] → correct scale → length → [CORRECT] → [FOR] → then continue memorizing music data.

2. **If the rest keys have been mistaken for music scale keys:**
   Press keys in the order: [CORRECT] → scale → length → [CORRECT] → [FOR] → then continue memorizing music data.

3. **If music scale keys have been mistaken for rest keys:**
   Press keys in the order: [CORRECT] → rest → length → [CORRECT] → [FOR] → then continue memorizing music data.

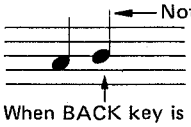
4. **If the wrong chord key (e.g. A) is pressed when memorizing chords:**
   After pressing the [CHORD SET] key again to complete the operation, press keys in the order: [BACK] → [FOR] → [CORRECT] → correct chord (e.g. [D]) → [CHORD SET] → [CORRECT] → [FOR] then continue memorizing music data.

5. **If the wrong music scale or rest key is pressed after memorizing a chord:**
   After memorizing length, press keys in the order: [BACK] → [FOR] → correct scale or correct rest → length → [CORRECT] → [FOR] → then continue memorizing music date.

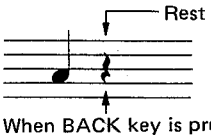
- If the correct key is pressed after the wrong note or rest key, the previous chord is changed to the note or rest.
- If the CORRECT key or CHORD SET key is pressed again immediately after being pressed once, the processor returns to the original condition.

- **TO CORRECT MUSIC DATA ONCE THEY HAVE BEEN MEMORIZED**

1. Press the BACK key to call out the incorrect music data. To correct chords, the note or rest immediately preceding the chord is called.

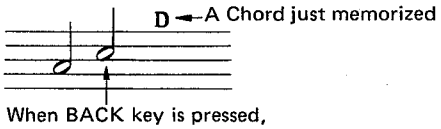
NOTES

When BACK key is pressed,

indicator lights up.

RESTS

When BACK key is pressed,

indicator lights up.

CHORDS

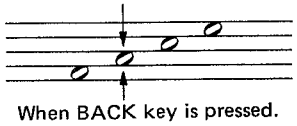


When BACK key is pressed,

indicator lights up.

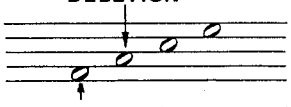
2. For correction procedure, see page 18.

- **AFTER CORRECTION, DELETION OR ADDITION IS COMPLETE AND THE BACK KEY IS PRESSED, THE INDICATORS LIGHT UP AS FOLLOWS;**

CORRECTION

When BACK key is pressed.

indicator lights up.

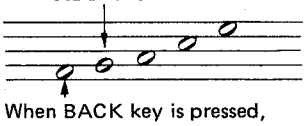
DELETION



When BACK key is pressed,

indicator lights up.

ADDITION



When BACK key is pressed,

indicator lights up.

—— CORRECTION, DELETION AND ADDITION OF MEMORIZED MUSIC DATA: Continued ——

• CONTINUOUS CORRECTION, DELETION AND ADDITION

Use the CORRECT key before and after the notes, rests or chords which are to be changed, i.e.:

Press keys in the order: CORRECT → correct data → CORRECT

For notes and rests, corrections can be made continuously until the CORRECT key is pressed finally, i.e.:

Press keys in the order:

CORRECT → music scale → ♩ → REST → 𝄽 →

→ music scale → ♪ ..... CORRECT

In this case, single bars and chords may be ignored.

If the DELETE key is pressed continuously, deletion can be made continuously, i.e.:

Press keys in the order:

CORRECT → DELETE → DELETE → DELETE .....

→ CORRECT

Only one addition can be made between two depressings of the CORRECT key, i.e.:

Press keys in the order:

CORRECT → ADD → musical scale → ♩ → CORRECT

If operations are made continuously, only the last music data (note) is added, i.e.:

Press keys in the order:

CORRECT → ADD → musical scale → ♩ → musical scale →

→ ♪ → musical scale → ♩ → CORRECT

Only this note is added.

• TO CORRECT AN ENTIRE TUNE FROM THE MIDDLE

With the MODE selector switch in the AUTO PLAY (LOAD) position, call out the note or rest immediately preceding the music data to be corrected. Slide to the MEMORY (SAVE) position and memorize the music data. The memory from this point will be cleared, and the new music data will be memorized.

- Not necessary to use the CORRECT key — the whole tune can be corrected from the middle.

① ♩ ♪ ♩. ♪ ♩ ♪ ♪

⇧

Press the STOP key, then slide to the MEMORY (SAVE) position.

② ♩ ♪ ♩ ♪ 𝄾 ♭ 𝄪

↓

A new music data can be memorized from here on.

NOTE

After sliding to the MEMORY (SAVE) position, the RECALL MEMORY keys (BACK key or FOR key) will not operate even if they are pressed.

• SINGLE BARS

- Single bars cannot be changed to notes, rests or chords.
- Single bars are required only at the beginning (for synchronizing rhythm), and in the middle of tunes following notes with sharps (♯), flats (♭) and natural (♮) (for temporary signatures). For other single bars, there is no need to memorize.
- To add single bars, call the note or rest following the bar and then make the addition. It cannot, however, be added at points where data has already been memorized.
- Single bars cannot be deleted alone. Also, if the immediately preceding note is deleted, the single bar is deleted at the same time.

• MEMORY CAPACITY IS EQUIVALENT TO 340 NOTES OR RESTS

- If this capacity is exceeded, the indicators will not light even if the keys are pressed, and no electronic music will be heard.
- If a tune has saturated the memory, additions can still be made to the middle of the tune, but in this case the end of the tune will be cut off corresponding to the amount which has been added in the middle.
- It should be noted that tunes with more than 340 signatures cannot be memorized.

340 notes

♩ ♪ ♩ 𝄽 ♩ ♪ ..... 𝄾 𝄾 ♭ 𝄿 ♩

⇧

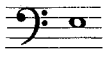
If an addition is made here.

♩ ♪ ♩ 𝄽 ♩ ♭ ♭ 𝄾 ♪ ..... 𝄾 𝄾 ♭ 𝄿 ♩

The end of the tune is cut off by the amount of the addition.

SIGNATURES USED IN SHEET MUSIC

■ MUSIC SIGNATURES

G clef	Ignored when memorizing, as it is unnecessary.
F clef	 and are equivalent
C clef	to and the sheet music must therefore be transcribed in G.

- For recording in F and C, the scale of the music processor is often inadequate, and we therefore do not recommend this procedure.

■ TIME SIGNATURE AND RHYTHM

When memorizing, the time signature is ignored, but for automatic playback the rhythm is selected to match the time signature.

Time Signature	Rhythm
$\frac{4}{4}$(C)	Swing, rock and beguin
$\frac{3}{4}$	Waltz
$\frac{2}{4}$ $\frac{2}{2}$(¢)	The same rhythm is used as for $\frac{4}{4}$(C), but the rhythm does not match perfectly. $\frac{2}{4}$ → doubles the length of notes. $\frac{2}{2}$(¢) → If the length of notes is halved, memorizing proceeds smoothly.

- The rhythms used for $\frac{4}{4}$(C) are as follows. They will be found to match a great number of tunes, but "feeling" should be used to decide the rhythm selected depending on the tune.

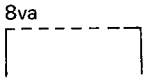
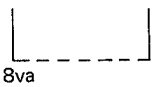
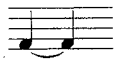
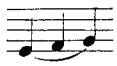
  Swing: ➡ Suitable for rather old tunes or jazz songs, etc.

  Rock: ➡ Matches a wide range of rock and pop music.

  Beguine: ➡ Fits country music, etc., with a humorous touch.

  Tunes with a change of time signature cannot be memorized.

■ PRINCIPLE SIGNATURES AND MEANINGS

Signature	Meaning
♯ Sharp	Shift up by one semitone
♭ Flat	Shift down by one semitone
♮ Natural	Return to original note
♯♯ (×) Double sharp	Raises note which already has one sharp, by a further semitone (when memorizing, press the scale key one tone higher up)
♭♭ Double flat	Lowers note which already has one flat, by a further semitone (when memorizing, press the scale key one tone lower down).
Tie	Continues same note.
Slur	Slurs different notes together (cannot be memorized).
 8va	Raises notes within the line, by one octave (when memorizing, memorize the note one octave higher).
 8va	Lowers notes within the line, by one octave (when memorizing, memorize the note one octave lower).

■ WHEN THE FOLLOWING CHORDS ARE PRESENT

Chords of up to 2 signatures can be memorized.

For example, with A♭7, A♭m, A♭m7, etc.	Only ⌜A♭⌟ is memorized.

With the following special chords:

A6、Asus4、 Amaj7 (or AM7、A△7) Aaug (or A+)、A−5	Only ⌜A⌟ is memorized.
Adim	Memorized as ⌜Am⌟.
A/C♯ (or Aon C♯) Am/C (or Amon C) and other fractional codes	➡ ⌜A⌟ ➡ ⌜Am⌟ Numerator is memorized.

- When these chords are memorized, the musical feeling changes slightly.
- The above is also the same in the case of B, C, D, E, F, G.

■ THE LENGTH OF NOTE AND REST
(compared with quarter note.)

- Whole note = ♩ + ♩ + ♩ + ♩ (same length) → whole rest
- Half note = ♩ + ♩ → half rest
- Quarter note → quarter rest
- Eighth note = 1/2 → eighth rest
- Sixteenth note = 1/4 → sixteenth rest

> thirty-second note = 1/8 → thirty-second rest
> (Notes and rests shorter than thirty-second note and thirty-second rest cannot be memorized)

■ TRIOLE

Ties, duolets, triole, quartets, quintets, etc., all occur, but the most common signature is the triole.

Triole	Meaning	How to Memorize
♩ ♩ ♩ (3)	○ Indicates divided into 3 equal parts.	Memorize by pressing keys 3 times in the order: music scale → TRIOLE → ♩
♩ ♩ ♩ (3)	♩ Indicates divided into 3 equal parts.	Memorize by pressing keys 3 times in the order: music scale → TRIOLE → ♩
3 ♪ ♪ ♪	♩ Indicates divided into 3 equal parts.	Memorize by pressing keys 3 times in the order: music scale → TRIOLE → ♪
3 ♪ ♪ ♪	♪ Indicates divided into 3 equal parts.	Memorize by pressing keys 3 times in the order: music scale → TRIOLE → ♬

The following modified can also be memorized.

- 3 𝄽 ♩ ♩ : REST → TRIOLE → 𝄽 → music scale → TRIOLE → ♩ → music scale → TRIOLE → ♩ keys.
- ♩ ♪ (3) : music scale → TRIOLE → ♩ → music scale → TRIOLE → ♪ keys.
- 6 ♪ ♪ ♪ ♪ ♪ ♪ : repeat 6 times in the order: music scale → TRIOLE → ♬ keys.

■ NOTES AND RESTS WITH DOTS

A dot on anote or rest lengthens it by 1.5 time.

- ○. = ○ + ♩
- ♩. = ♩ + ♩
- ♩. = ♩ + ♪
- ♪. = ♪ + ♬

- 𝄽. = 𝄽 + 𝄾
- 𝄾. = 𝄾 + 𝄿

(Rests other than these are not often used.)

■ NOTES WITH 2 DOTS

Notes with a 2 dots cannot be memorized as such.

- ○.. = ○ + ♩ + ♩ → memorized as: ○. ♩
- ♩.. = ♩ + ♩ + ♪ → memorized as: ♩. ♪
- ♩.. = ♩ + ♪ + ♬ → memorized as: ♩. ♬
- ♪. = ♪ + ♬ + 𝅘𝅥𝅰 → as there is no 𝅘𝅥𝅰, this cannot be memorized.

■ OTHER NOTES

- ♫ = memorized as: ♪ ♪ (♫ = ♪ ♪ ♪ ♪)
  (same even if number increases.)
- ♬ = memorized as: ♬
- ♪. ♬ = memorized as: ♪. ♬
- ♬ ♬ = memorized as: ♬ ♪ ♬

■ OTHER TIES

These cannot be memorized precisely, but they may be memorized by making the following rotations.

The "feeling" of the tune will however be slightly different.

- 5 ♩ ♩ ♩ ♩ ♩ → can be memorized as: 3 ♩ ♩ ♩ ♩ ♩
  (total length = ♩)
  or as: 3 ♩ ♩ ♩ ♩ ♩

- 5 ♪ ♪ ♪ ♪ ♪ → can be memorized as: 3 ♪ ♪ ♪ ♪ ♪
  (total length = ♩)
  or as: 3 ♪ ♪ ♪ ♪ ♪

- The total length must be adjusted, otherwise the rhythm may become unsuitable.

■ BAR LINE, DOUBLE BAR AND GREAT DOUBLE BAR

Bar line
(for punctuating bars)

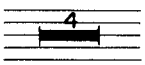
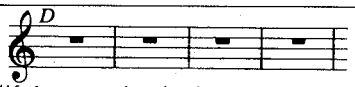
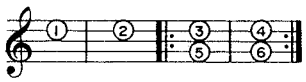
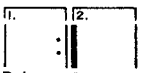
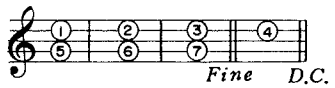
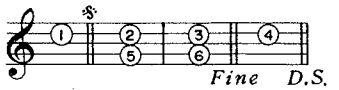
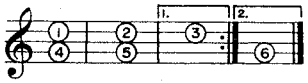
Double bar
(for punctuating tunes)

Great double bar
(end of tune)

All is represented and memorized by the Single Bar keys. ( )

■ MEANING OF REPEAT SIGNATURES

When there are repeat signatures, memorize repeatedly according to the directions of the signature.

Signatures	Meaning
Repeat tune	1 bar repeated 2 bars repeated
 Rest after 4 bars	 (If there are chords, they are memorized.)
Repeat	Repeat
 Prima volta Seconda volta	After repeating, go to Seconda Volta.
D.C. da capo	 Repeat from biginning to *Fine* .
D. S. dal segno	 Repeat from 𝄋 to *Fine*.
Fine Fine	At the end of a tune. 𝄐 is sometimes used instead.
Coda Coda	After repeating until **to** , go to **Coda** Coda.

• Some tunes may be too long to memorize. In this case, skip some of the repetitions so that they can be memorized.

■ THE FOLLOWING MARKS ARE IGNORED WHEN MEMORIZING. THEY WILL APPEAR WHEN EXECUTING OPERATIONS DURING PLAYBACK

Adjust for signatures or marks denoting the pace, by means of the TEMPO control.
With the TEMPO control in the centre position, ♩ = approx. 140. The range of variation is approx. ♩ = 50 to ♩ = 400.

METRONOME SIGNATURE ♩ = ○ ○

Denotes the overall pace of the tune.
If, for example, ♩ = 120, the tune will be played at such a tempo that ♩ occurs 120 times/minute.

TEMPO MARKS

Rougher notation than metronome signature for overall tempo of tune.

Adagio ..... slow
Andante ..... walking pace
Moderato .... medium pace
Allegro ..... quick
Presto ..... urgent

TEMPO VARIATION MARKS

ritard. or rit. (ritardando) .....slower and slower
accel. (accelerando) .....quicker and quicker
Tempo I (tempo primo) .....initial tempo

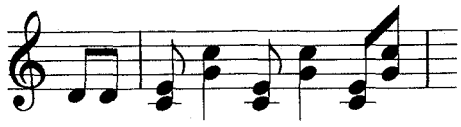
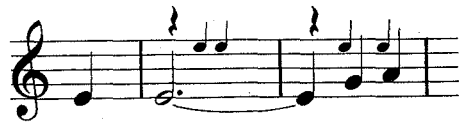
Adjust for signatures and marks denoting intensity, by MELODY VOLUME, ACCOMPANIMENT VOLUME control of the music processor and VOLUME control of the unit.

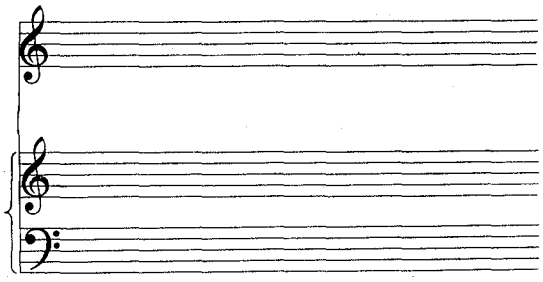
pp (pianissimo) ..... extremely subdued
p (piano) ..... subdued
mp (mezzo piano) ..... rather subdued
mf (mezzo forte) ..... rather loud
f (forte) ..... loud
ff (fortissimo) ..... very loud
Cresc. (crescendo) or .. louder and louder
decresec. (decresendo) or .. softer and softer
dim. (diminuendo) ..... softer and softer
F.O. (Fade Out) ..... softer and softer, until sound disappears.

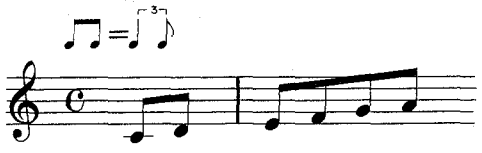
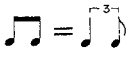
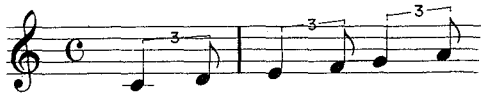
OTHER

Notes with this mark 𝄐 (fermata) are slightly extended.
Try adjusting with the TEMPO control.

SIGNATURES USED IN SHEET MUSIC: Continued

■ TO MEMORIZE SHEET MUSIC LIKE THIS

The upper notes often constitute the basic melody, so those may be memorized.

The small notes are just embellishments, so only the large notes are memorized.



The lower two scores are piano accompaniment, while the upper score is the basic melody, e.g.
So only the upper score is memorized.

When  occurs at the beginning of a time, all may be transcribed to for memorizing.

■ IGNORE THE FOLLOWING SIGNATURES

(accent)

(staccato)

(staccatissimo)

(tenuto)

or (sforzand)

Signatures for denoting musical feeling.

(appoggiatura)

(appoggiatura)

(turn)

(mondent)

(trill)

Grace notes (Trivial sounds are required, and memorizing then is difficult.)

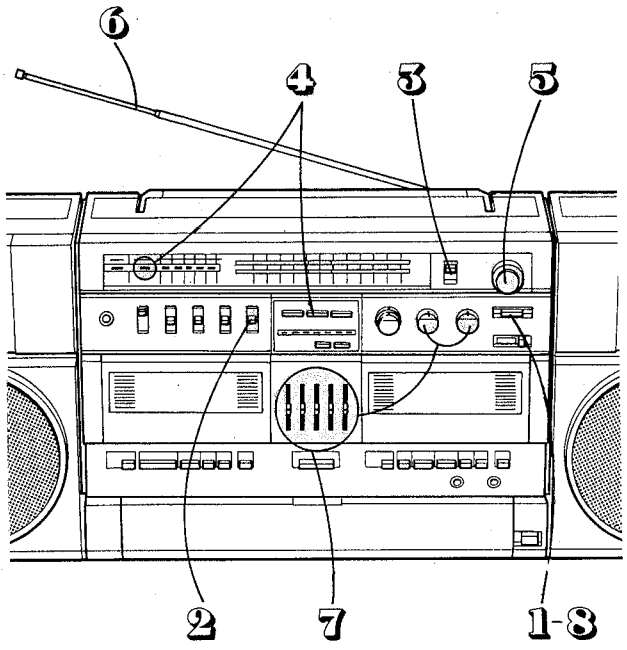
Ad lib (adlib) — Denotes free *improvisation*

solo (solo) — Denotes solo instrument (e.g. piano)

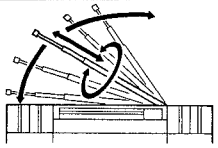
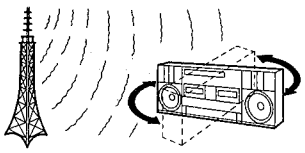
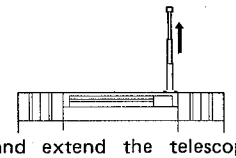
N.C. (no chords) — Denotes playing without any chords.

Various signatures are used in sheet music to express the personality of the composer and, as there may be some signatures which are not explained on pages 21 to 24, we regret any omissions.

RADIO OPERATION



1. Set the POWER switch to the ON position. The POWER indicator will illuminate.
2. Slide the FUNCTION switch to the RADIO position.
3. Slide the BAND selector to the FM, LW, MW or SW position.
4. With the BAND selector in the FM position, set the FM MODE selector to the STEREO position. The FM STEREO indicator will illuminate when an FM stereo broadcast is received. Even with the FM MODE selector in STEREO position, mono broadcasts can be received if the broadcasting station is not transmitting a stereo programme at that time. If stereo reception is unsatisfactory, set the FM MODE selector to the MONO position.
5. Rotate the TUNING control in the appropriate direction until the desired broadcast is received. FINE TUNING control functions only for the SW band.
6. Adjust the aerial appropriately to obtain the best reception on the band selected. (See below for more detailed instructions on adjusting the aerial).
7. Adjust volume and sound quality (refer to instructions on page 8).
8. Set the POWER switch to the STAND-BY ⏻ position to terminate radio operation and extinguish the POWER indicator.

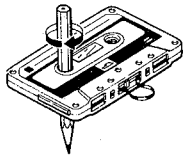
For receiving FM broadcasts	For receiving LW or MW broadcasts	For receiving SW broadcasts
 Raise and extend the telescopic rod aerial. Adjust the position and length of the aerial until FM broadcast reception signal is at peak strength.	 Rotate or locate the unit to receive peak signal strength of the LW or MW broadcast.	 Raise and extend the telescopic rod aerial vertically to its full length.

CASSETTE RECORDER OPERATION

1 CASSETTES

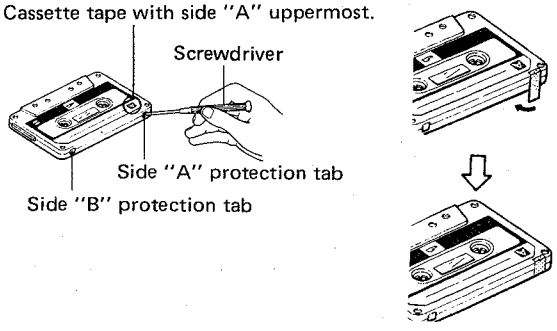
▪ CASSETTE TAPE SELECTION

- Use only well-known brands of tape.
- Use of C-120 (120 minutes) cassettes is not recommended, as the extreme thinness of this tape may result in breakage or other problems.
- Check to ensure there are no loose layers of tape visible through the cassette centre window. Tighten these loose layers with a pencil or ball-point pen before inserting the cassette into the unit.



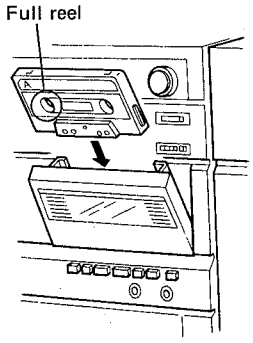
▪ PROTECTION AGAINST CASSETTE TAPE ERASURE

All cassette tapes are provided with tabs which, when in place, allow tape erasure to be performed. If these tabs are removed, the tape cannot be erased (The REC • button of Deck 2 cannot be depressed.)
The tape can be re-recorded or erased by covering the tab holes with plastic tape.



■ LOADING AND UNLOADING THE CASSETTE TAPES

The unit's tape recorder is equipped with two decks. Deck 1 may be used for playback with APLD/APPS operation (not for recording). Deck 2 may be used for normal playback and recording purposes.



NOTE:

- Stop the tape before opening the cassette compartment.

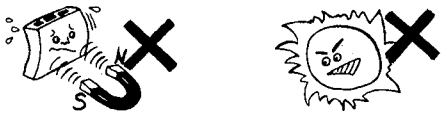
LOADING

1. Depress the EJECT ≜ button of Deck 1 or Deck 2, respectively.
2. Load the cassette tape into the compartment so that the title of the tape track to be used is facing outwards.
3. Close the compartment lid.

UNLOADING

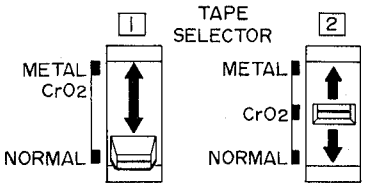
Depress the EJECT≜ button and remove the tape.

■ NOTES FOR STORING CASSETTE TAPES



- Do not locate cassettes near objects with a strong magnetic field, such as radios, TV sets or loudspeakers. Magnetic fields may reduce the tape sensitivity or even erase the recording.
- Do not store cassettes for extended periods in hot, moist or dust locations.

2 TAPE SELECTOR SWITCHES



The unit is furnished with independent TAPE SELECTOR switches for Deck 1 and Deck 2, respectively.
According to the deck to be used, the designated switch should be set to the proper position before beginning playback or recording, in order to match the bias and equalization circuits with the cassette tape being used.

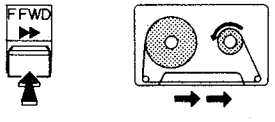
- Refer to the following chart, and set the switch to the appropriate settings.

Type of tape	Deck 1: Tape Selector	Deck 2: Tape Selector	
		Playback	Recording
Normal (low noise) tape	NORMAL	NORMAL	NORMAL
Chrome tape	METAL/CrO_2	CrO_2	CrO_2
Ferri-chrome tape	METAL/CrO_2	CrO_2	NORMAL
Metal tape	METAL/CrO_2	METAL	METAL

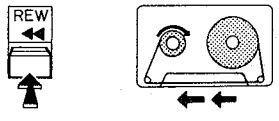
3 FAST FORWARD/REWIND

- Push the POWER switch to the ON position.
- Depress the STOP ■ button if the recorder is in a mode other than neutral.
- For fast forward winding or rewinding of short sections of the tape, the cue or review function may be used, respectively. Refer to instructions "CUE AND REVIEW (SKIPPING)" on page 27.

Fast Forward
Depress the F FWD ▶▶ button of Deck 1 or Deck 2 for fast forward winding of the tape.



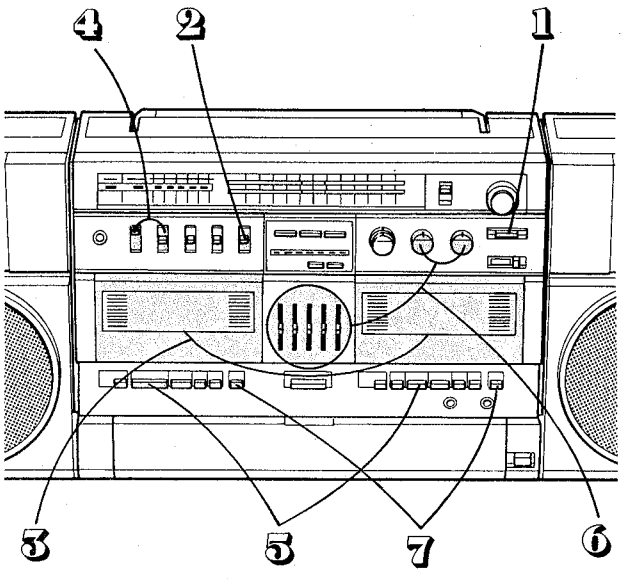
Rewind
Depress the REW ◀◀ button of Deck 1 or Deck 2 to rewind the tape.



4 PLAYBACK

- With this unit it is possible to perform either individual playback with Deck 1 or Deck 2, or simultaneous playback with Decks 1 and 2.
- Since treble is emphasized on tapes recorded with the Dolby NR system, for playback of such tapes with this unit, lowering treble slightly with the GRAPHIC EQUALIZER controls makes for easier listening.

When playing a tape with Deck 1, set the DUBBING switch to the NORMAL position. In the HIGH SPEED position, the equalizer circuit for high speed operation is activated and the high range will be lowered.



1. Set the POWER switch to the ON position.
2. Slide the FUNCTION switch to the TAPE position.
3. Load a pre-recorded cassette into the cassette compartment (refer to instructions on page 26).
4. Set the TAPE SELECTOR switches to the proper position (refer to instructions on page 26).
5. INDIVIDUAL PLAYBACK
   Depress the PLAY ▶ button of Deck 1 or Deck 2 to begin playback.

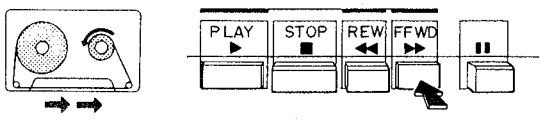
   SIMULTANEOUS PLAYBACK
   Depress the PLAY ▶ buttons of Deck 1 and Deck 2 simultaneously.
   The stereo audio reproduction from the cassette tapes on Deck 1 and Deck 2 will be heard mixed respectively from the speaker's output — right channel and left channel.
6. Adjust volume and sound quality (refer to instructions on page 8).
7. Depress the PAUSE II button to discontinue playback temporarily. The tape will stop at the point where this button is depressed. The playback will be resumed from this point when the PAUSE II button is depressed a second time.
8. To listen to the reverse side of the tape, unload the cassette, reverse it and reload it in the cassette compartment.

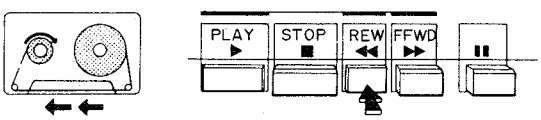
AFTER USE:
Depress the STOP ■ button to return the unit to the neutral mode; and set the POWER switch to the STAND-BY ⏻ position.

■ CUE AND REVIEW (SKIPPING)

CUE
During playback on Deck 2, depress the F FWD ▶▶ button for fast forward winding of short sections of the tape.
Fast forward will continue as long as the button is depressed, and playback will resume from the point at which this button is released.

REVIEW
During playback on Deck 2, depress the REW ◀◀ button to rewind short sections of the tape.
Rewind will continue as long as this button is depressed, and playback will resume from the point at which this button is released.





MECHANICAL NOTES:

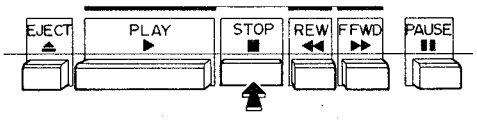
• MODE SELECTION
Before changing from one mode to another while the unit is operating in the recording, playback, fast forward or rewind mode, be sure to first depress the STOP ■ button. For APLD operation, however, it is not necessary to depress the STOP ■ button in advance: to start APLD, depress the F FWD ▶▶ or REW ◀◀ button when the PLAY ▶ button is being depressed.

• WHEN THE BATTERIES ARE TOO WEAK
The unit will not function by depressing the PLAY ▶ button or REC ● button and it is then not possible to return the PLAY ▶ button or REC ● button completely by depressing the STOP ■ button.
In this case, change the batteries or use an AC supply lead without opening the cassette compartment.

• FULL AUTO STOP SYSTEM
When the end of the tape is reached while the unit is operating in the recording, playback, fast forward, rewind or APLD mode, the full auto stop system is activated and automatically puts the unit into the neutral (stop) mode.

The automatic stop mechanism may not operate when the unit is using a DC power supply (batteries) and the battery level is inadequate.

• HOW TO STOP TAPE
To stop the tape when the unit is in the recording, playback, fast forward, rewind or APLD mode, depress the STOP ■ button.



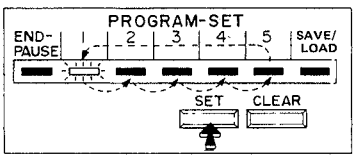
5 APLD (Auto Program Locate Device)/APPS (Auto Program Pause System)

INTRODUCTION
SHARP has solved one of the main drawbacks of cassette play in comparison with record play:
That of finding the beginning or end of a selection.
To eliminate the need for trial, error and delay, APLD/APPS was developed to automatically scan a tape for the blank space between recordings, and to either start playback from the beginning of the recording following this space, or stop temporarily at the end of the selection in playing back. APLD/APPS is available only on Deck 1.

Forward APLD
Performs fast forward winding to programmed spaces, and starts playback from the beginning of the selections following these spaces.

Reverse APLD
Rewinds to programmed spaces, and starts playback from the beginning of selections following these spaces.

APPS
Performs playback to programmed spaces, and automatically stops the tape when the end of the selections before these spaces is reached.



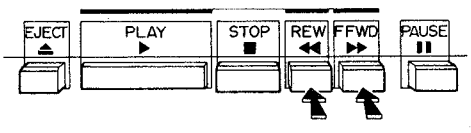
1 Count the number of blank spaces (musical gaps) on the tape between the current tape position and the desired selection.

2 Enter that number into memory by depressing the APLD/APPS SET button the same number of times. The corresponding APLD/APPS PROGRAM-SET indicator will illuminate. The APLD/APPS PROGRAM-SET indicator shows the number of programmes the APLD/APPS will skip.

- Depressing the APLD/APPS SET button once will cause the APLD/APPS PROGRAM-SET indicator to advance from "1" by one, as far as "5", at which point the indicator will return to "1". The progression is as follows: "1 → 2 → 3 → 4 → 5 → 1 → 2 . . . .
- When depressing the APLD/APPS CLEAR button, the APLD/APPS PROGRAM-SET indicator will be turned off.
- You can change the APLD numbers while APLD is functioning.
- The APLD/APPS can only accommodate numbers up to 5. To locate selections separated by more than 5 spaces, have the APLD/APPS locate the fifth space, then reactivate for the additional number of spaces necessary to reach the desired selection.

- It is necessary to enter the APLD number only when wishing to skip more than one space on the tape. It is not necessary to use the APLD to repeat the current selection or skip ahead to the next selection.

- When depressing the PAUSE II button or STOP ■ button after setting the APLD/APPS music numbers, the numbers will decrease by one number. In case only one music number is set, the END-PAUSE indicator will illuminate. While the END-PAUSE indicator is illuminated, Deck 1 and Deck 2 do not function, therefore, release the END-PAUSE function by depressing the APLD/APPS CLEAR button.

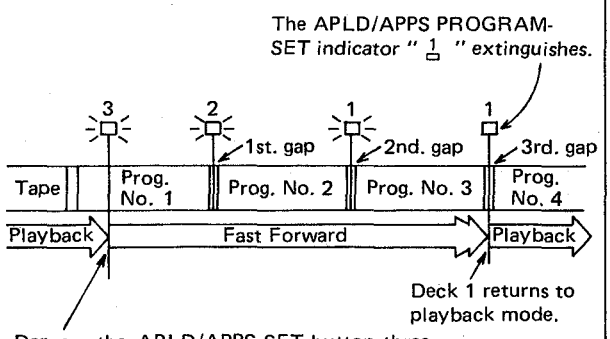


3 Depress the F FWD ▶▶ button or REW ◀◀ button.

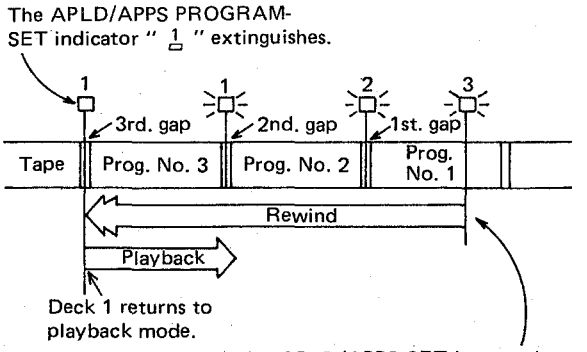
4 When Deck 1 reaches the desired space between selections, it will automatically release the F FWD ▶▶ button or REW ◀◀ button and start playback of the desired selection.

APLD Pause Control:
If it is desired to stop the tape at the beginning of the selection, depress PAUSE II button prior to performing the above operations.

EXAMPLE **To skip three selections in the forward direction and start playback automatically from the beginning of the fourth selection:**

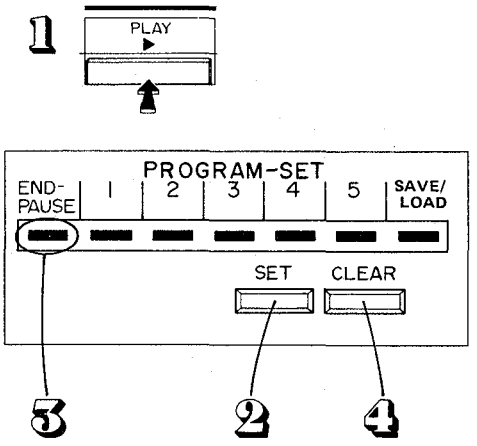


EXAMPLE **To skip three selections in the reverse direction and start playback from the beginning of the third selection:**



■ APPS OPERATION

At times of simultaneous playback, or dubbing from Deck 1 to Deck 2, activating the APPS function will stop tape motion on both decks.



- You can change the APPS numbers while APPS is functioning.
- When the music is gradually faced out, the APPS may be activated before the end of the music.

1. Depress the PLAY ▶ button of Deck 1 to start playback.
2. Count the number of selections to be played back, and enter that number into memory by depressing the APLD/APPS SET button the same number of times. The corresponding APLD/APPS PROGRAM-SET indicator will illuminate.
   - As spaces are passed during playback, the indicator will show the number of selections remaining to be played.
3. When the end of the last selection is reached, the tape will stop automatically, and the END-PAUSE indicator will illuminate.
   Caution: At this time, the PLAY ▶ button will not disengage.
4. Depress the APLD/APPS CLEAR button to disengage the APPS function, and resume playback from that point.

CAUTION:

Do not allow the APPS function to remain engaged for extended periods as it may damage the tape or pinch roller. When playback is not continued, be sure to depress the STOP ■ button to stop the playback function, and also depress the APLD/APPS CLEAR button.

NOTES ON APLD/APPS OPERATION

- The APLD/APPS may not function perfectly at all times with tape containing the following characteristics:
  a. The recorded signal on the tape is of an intermittent nature (speech, music with silent passages etc.).
  b. The recorded signal on the tape contains soft classical music, solo performance, modern jazz, etc.
  c. The recorded signal on the tape is of low strength.
  d. The recorded programme items are separated by less than a three second gap (during which there occurs no signal).
  e. The recorded programme items are separated by gaps which are not free of noise or stray signals.
- If the APLD/APPS function is activated near the end of a selection, one programme may be skipped. Check by watching the APLD/APPS PROGRAM-SET indicator as it is displayed.
- Avoid locating the unit in the vicinity of powerful magnetic fields, such as those generated by TV sets, dynamos or other electrical appliances.
- When the APLD is functioning (searching for a programme item in either forward or reverse), the speakers may emit a slight high-pitched sound. This is not due to any malfunction of the unit, and is no cause for alarm.

■ APLD/APPS SPACING

In order for the APLD/APPS to operate correctly, there must be a space of at least 4-second duration between each item on the tape. In order to edit space (non-signal space) on tapes, follow the instructions below.

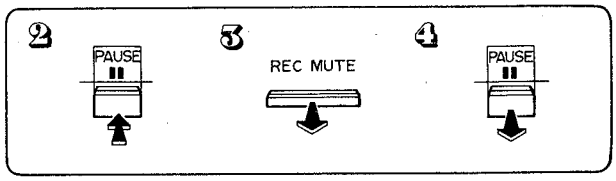
1 Press the REC MUTE button (for about 5 seconds) during recording at a point suitable for selection editing.

- Since the REC MUTE button cannot be locked into place, it is necessary to keep this button pressed for the entire duration of editing time.

2 After sufficient editing time has elapsed, depress the pause II button of Deck 2 before releasing the REC MUTE button.

3 Release the REC MUTE button. The space is now edited onto the cassette tape recording.

4 Depress the PAUSE II button a second time to release it and begin recording of the next selection.



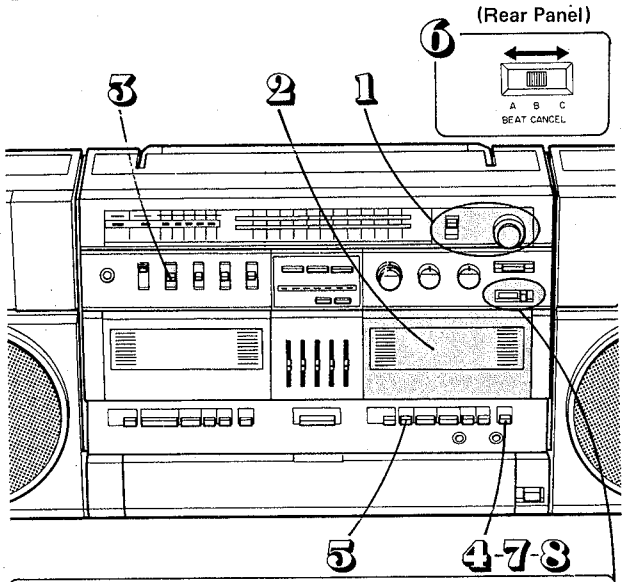
5 Perform steps 1 — 4 to edit spaces between selections so that the tape may be used for future APLD/APPS operation.

6 RECORDING FROM THE BUILT-IN RADIO

- Since recording is possible only with Deck 2, the following instructions are relevant to that deck alone.
- When recording important selections, be sure to make a preliminary test to ensure that the desired material is being properly recorded.

ALC (Automatic Record Level Control) CIRCUIT

The ALC circuit automatically controls the level of input signal strength used for recording.



DIGITAL TAPE COUNTER

Depress the button at the side of the counter to reset to "000". The counter will advance while recording or playback is in progress. These readings provide a useful reference during recording and playback. The tape counter functions only with Deck 2.

1 Tune in to the desired station (refer to instructions on page 25).

2 Load a cassette into the Deck 2 cassette compartment (refer to instructions on page 26). Make sure that the protection tabs are intact (refer to page 25).

3 Set the TAPE SELECTOR switch of Deck 2 to proper position. Refer to the chart on page 26 to determine the proper (tape) setting.

4 Depress the PAUSE II button.

5 Depress the REC ● button. This will also engage the PLAY ▶ button.

6 When LW or MW radio reception is hampered by interference, slide the BEAT CANCEL switch on the back of the unit to the position A, B, or C, in which the interference is reduced most.

7 Depress the PAUSE II button a second time to release it and begin recording.

8 Depress the PAUSE II button to temporarily discontinue recording. The tape will stop at this point. To resume recording from the same point, release the PAUSE II button by depressing it a second time.

- The VOLUME and GRAPHIC EQUALIZER controls may be adjusted with no effect on the recording level input signal.

When the end of tape is reached

All buttons will be released automatically. However, radio reception will continue uninterrupted. If it is desired to turn off the radio at this time, set the POWER switch to the STAND-BY ⏻ position.

■ ERASING RECORDED TAPES

Previously recorded material will be erased automatically whenever new material is re-recorded onto the tape. If it is desired to erase a previously recorded tape without recording over it, follow the instructions below.

1. Load the tape to be erased into the cassette compartment.
2. Set the POWER switch to the ON position.
3. Slide the FUNCTION switch to the TAPE position.
4. Slide the DUBBING switch to the NORMAL position.
5. Depress the REC ● button. This will automatically engage the PLAY ▶ button and begin erasing the tape.

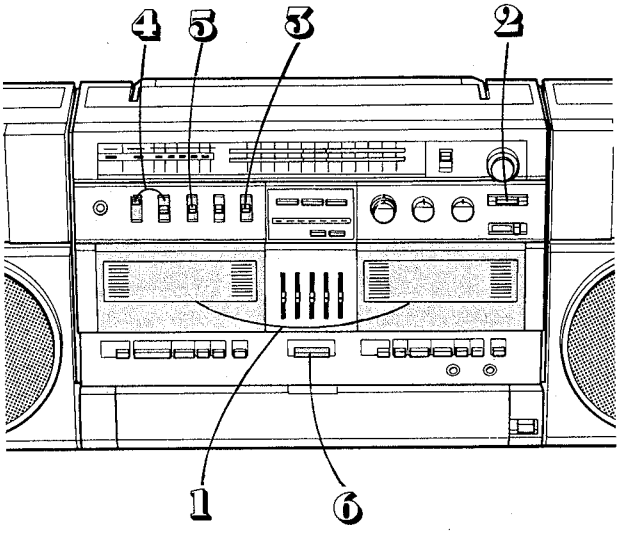
CAUTION:

- While erasing is in progress, check to ensure that Deck 1 is in the neutral mode.

For erasure of shorter tape segments, use the REC MUTE button during recording.

7 DUBBING FROM DECK 1 TO DECK 2

- The unit's dual deck system permits dubbing operations without the use of another tape deck. Dubbing is performed from Deck 1 onto Deck 2.
- Normal-speed dubbing as well as high-speed dubbing may be performed with this unit.

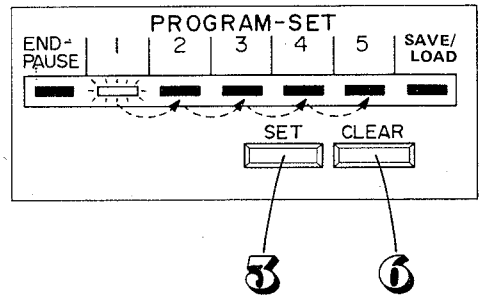


- Do not connect any microphones to the MIXING MIC sockets during dubbing.
- Do not change the setting of the DUBBING switch during dubbing.

1. Load a pre-recorded cassette tape into the cassette compartment of Deck 1, and a cassette tape suitable for recording into the cassette compartment of Deck 2.
2. Set the POWER switch to the ON position.
3. Slide the FUNCTION switch to the TAPE position.
4. Slide the TAPE SELECTOR switches of Deck 1 and Deck 2 to their respective proper positions (refer to chart on page 26).
5. Slide the DUBBING switch to either the NORMAL or HIGH SPEED position.
   The NORMAL position permits dubbing to be performed at normal speed.
   The HIGH SPEED position permits dubbing at twice normal speed.
6. Depress the DUBBING START button. The PLAY ▶ button of Deck 1 and REC ● button, PLAY ▶ button of Deck 2 are automatically depressed.

■ APLD/APPS DUBBING

Dubbing may also be performed in cases where it is desired to dub only certain selected material. In such cases the beginnings of the desired selections may be easily found by using the FORWARD APLD, REVERSE APLD or APPS functions.
Perform APLD/APPS dubbing according to the following instructions.



1. Perform steps 1 – 5 of "DUBBING FROM DECK 1 TO DECK 2" to prepare the unit for dubbing.
2. Locate the beginning of desired selection by using the APLD (refer to page 28).
3. Set the desired number of selections to be dubbed with the APLD/APPS SET button (refer to instructions on page 29).
4. Depress the DUBBING START button.
   - Upon conclusion of dubbing of the preset selections, the END-PAUSE indicator will illuminate, and the tapes on Deck 1 and Deck 2 will simultaneously stop.
5. Depress the STOP ■ buttons on both decks.
6. Depress the APLD/APPS CLEAR button.
7. To perform dubbing of subsequent selections, repeat steps 1 – 6.

USE EXTERNAL MICROPHONES

NOTES ON USING MICROPHONES

- Avoid feedback by separating external microphones from speakers or by reducing volume.
- Stereo microphones should have an impedance of 400 ohms to 3 kohms, and be equipped with a plug 6.3mm in diameter.

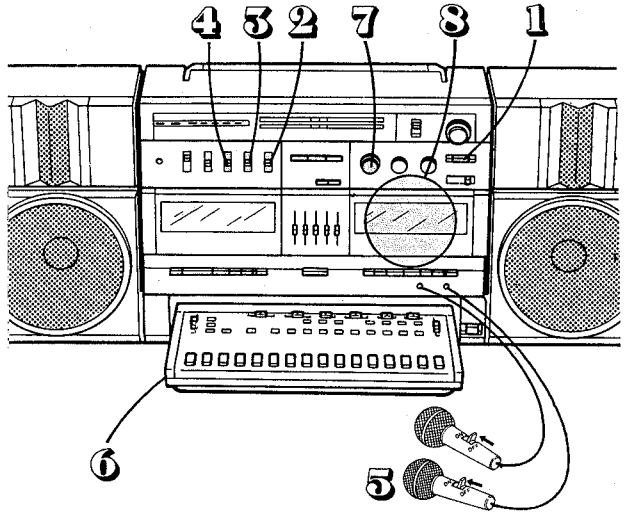
1 RECORDING FROM AN EXTERNAL MICROPHONE

- Check to ensure that Deck 1 is in the stop mode.

1. Connect two microphone plugs to the MIXING MIC right-hand socket (RIGHT) and the MIXING MIC left-hand socket (LEFT).
   Note: In the event that a microphone is connected only to the right or left socket, sound from the microphone will issue from the channel alone.
2. Set the POWER switch to the ON position.
3. Slide the FUNCTION switch to the TAPE position.
4. Slide the DUBBING switch to the MIC position.
5. Slide the MIC SELECTOR switch to the MIC position.
6. Perform steps 2 to 5, and step 7 of "RECORDING FROM THE BUILT-IN RADIO" on page 30.

2 MIXING OF MUSIC PROCESSOR AND AN EXTERNAL MICROPHONE

• When mixing, microphone sound is monaural.



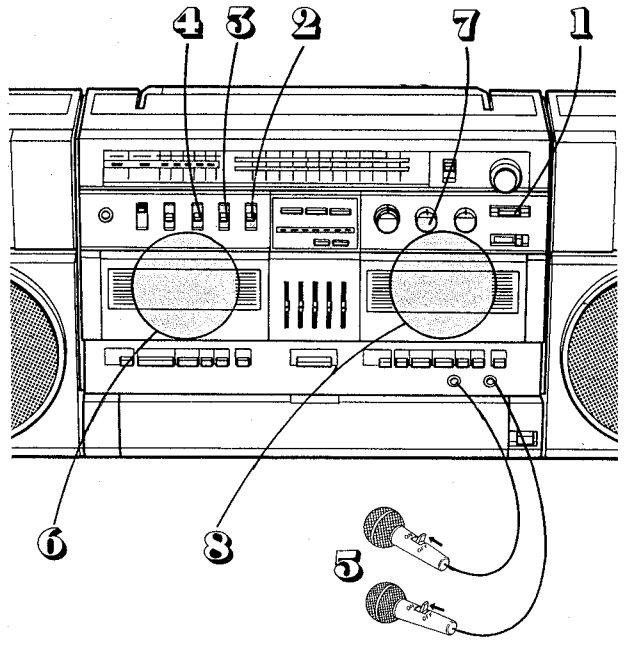
CAUTION:
When performing operations other than mixing, set the MIC VOLUME and ECHO controls to the MIN position.

1. Set the POWER switch to the ON position.
2. Slide the FUNCTION switch to the TAPE position.
3. Slide the MUSIC PROCESSOR switch to the ON position.
4. Slide the DUBBING switch to the MIC position.
5. Connect the external microphone to either MIXING MIC socket (1 or 2).
   • In cases where it is desired to perform mixing with two microphones, connect microphone plugs to sockets 1 and 2, respectively.
6. Automatic playback with the music processor (refer to instructions on page 13).
7. To adjust microphone volume and echo effect, turn the MIC VOLUME and ECHO controls to a suitable level with speaking into the microphone.

FOR MIXED RECORDING:

8. Perform recording operations with Deck 2 (refer to instructions for "RECORDING FROM THE BUILT-IN RADIO" on page 30).

3 MIXING OF TAPE AND AN EXTERNAL MICROPHONE



1. Set the POWER switch to the ON position.
2. Slide the FUNCTION switch to the TAPE position.
3. Slide the MIC SELECTOR switch to the MIX (ECHO ON) position.
4. Slide the DUBBING switch to the MIC position.
5. Connect the external microphone to either MIXING MIC socket (1 or 2).
   • In cases where it is desired to perform mixing with two microphones, connect microphone plugs to sockets 1 and 2, respectively.
6. Perform playback operations for Deck 1 (refer to instructions for "PLAYBACK" on page 27).
7. To adjust microphone volume and echo effect, turn the MIC VOLUME and ECHO controls to a suitable level with speaking into the microphone.

FOR MIXED RECORDING:

8. Perform recording operations with Deck 2 (refer to instructions for "RECORDING FROM THE BUILT-IN RADIO" on page 30).

By activating the APPS operation, it is possible to stop the tape automatically at the end of a specified selection (refer to instructions for "APPS OPERATION" on page 29).

4 MIXING OF OTHER AUDIO EQUIPMENT CONNECTED TO LINE IN/PHONO SOCKETS AND AN EXTERNAL MICROPHONE

1 Set the POWER switch to the ON position.

2 Slide the FUNCTION switch to the LINE IN/PHONO position.

3 Perform steps 3 and 4 for "MIXING OF TAPE AND AN EXTERNAL MICROPHONE" on page 32.

4 Activate the external audio equipment.

5 To adjust microphone volume and echo effect, turn the MIC VOLUME and ECHO controls to a suitable level with speaking into the microphone.

FOR MIXED RECORDING

6 Perform recording operations with Deck 2 (refer to instructions for "RECORDING FROM THE BUILT-IN RADIO" on page 30.

Do not mix the other audio equipment and music processor.

5 MULTI-RECORDINGS

Multi-recording is a method for superimposing voice and other sounds onto the original sound track by means of repeated mixing and dubbing.

1. Load a recorded tape into Deck 1 and an unrecorded tape into Deck 2.
2. Begin dubbing from Deck 1 onto Deck 2.
   (Refer to the instructions "DUBBING FROM DECK 1 TO DECK 2" on page 31.
   While dubbing is in progress, other sounds or selections may be recorded using a mixing microphone.
   (Refer to the instructions "MIXING OF TAPE AND EXTERNAL MICROPHONE" on page 32.
3. Load the mixed recording tape from Deck 2 into Deck 1, and a blank tape into Deck 2.
4. Multi-recording may be performed by repeating steps 2 and 3, above.

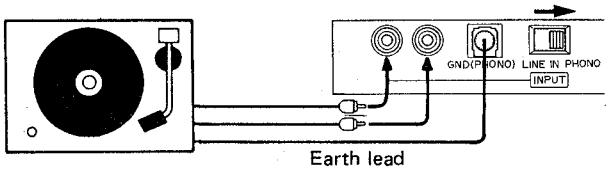
USE WITH EXTERNAL UNITS

1 CONNECTING AN EXTERNAL RECORD PLAYER

Since this unit contains an internal phono equalizing circuit, it can be used only with record players using magnetic cartridges which produce quality sound signals. Players with ceramic or crystal cartridges are not suitable for use with this unit.

- Since feedback (howling) may result if the unit and record player are placed in close proximity, they should be separated, when in use, to prevent such an occurrence.

1. Connect the output leads of the magnetic cartridge record player (optional extra) to the LINE IN/PHONO sockets of the unit. If the record player is equipped with an earth lead (or terminal), connect it to the GND (PHONO) terminal of the unit.



Earth lead

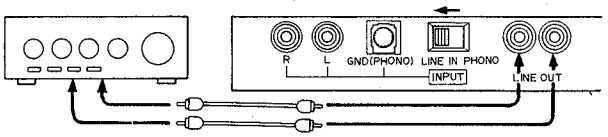
2. Slide the INPUT selector switch on the back panel to the PHONO position.
3. Set the POWER switch to the ON position.
4. Slide the FUNCTION switch to the LINE IN/PHONO position.
5. Set the record player in play mode.
6. Adjust the unit's controls (refer to instructions on page 8).
7. To record from discs, follow the instructions in "RECORDING FROM THE BUILT-IN RADIO" on page 30.

2 CONNECTING AN EXTERNAL AMPLIFIER

Use a standard lead fitted with RCA type pin plugs to connect the unit to the amplifier. This type of lead permits recording and play via external equipment.

■ AUDIO REPRODUCTION THROUGH AN AMPLIFIER

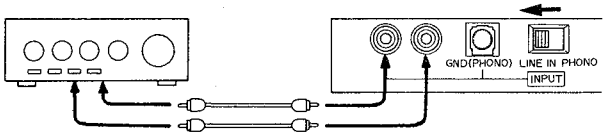
1. Turn off both the unit and the amplifier.
2. Connect the amplifier input sockets (TAPE PB, TAPE IN, etc.) to the LINE OUT sockets (right and left channels) of the unit (with leads having plugs suitable for fitting into each set of sockets).



3. Prepare the unit for radio operation (refer to page 25) or tape playback (refer to page 27).
4. Adjust the audio controls of the amplifier to suitable levels.

■ RECORDING FROM AN AMPLIFIER

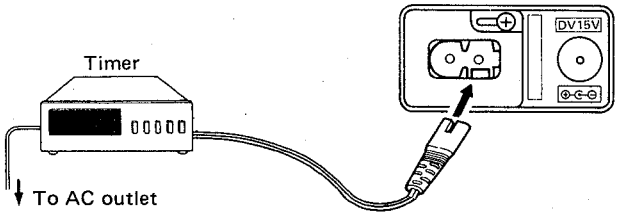
1. Turn off both the unit and the amplifier.
2. Connect the amplifier output sockets (TAPE REC, TAPE OUT, etc.) to the LINE IN/PHONO sockets (right and left channels) of the unit (with leads that have plugs suitable for fitting into each set of sockets).
3. Slide the INPUT selector switch on the back panel to the LINE IN position.



4. Set the POWER switch to the ON position.
5. Slide the FUNCTION switch to the LINE IN/PHONO position.
6. Turn on the power switch of the amplifier.
7. Begin recording (refer the instructions for "RECORDING FROM THE BUILT-IN RADIO" on page 30).

3 CONNECTING A TIMER UNIT

Any commercially available timer with an "automatic on" system enables the unit to begin recording, playback or radio operation automatically at any predetermined point in time.



1. Connect the AC supply lead of the unit to the "automatic on" outlet of the timer.
2. Connect the AC supply lead of the timer to an AC wall outlet.

■ AUTOMATIC PLAYBACK START

1. Perform steps 1 – 6 for tape playback (refer to page 27).
2. Depress the STOP ■ button.
3. Adjust the timer to the desired time for playback to begin.
4. Depress the PLAY ▶ button of Deck 1 and/or Deck 2.
5. When the pre-set time arrives, power will be supplied to the unit and playback will begin.

■ AUTOMATIC RADIO START

1. Tune the radio to the desired station (refer to instructions on page 25).
2. Adjust the timer to the desired time for radio listening.
3. When the pre-set time arrives, the built-in radio will be turned on.

■ AUTOMATIC RECORDING START

1. Tune the radio to the desired station (refer to instructions on page 25).
2. Load a tape into the cassette compartment of Deck 2. Check to ensure the erasure protection tabs are intact.
3. Set the TAPE SELECTOR switch of Deck 2 to the proper position.
4. Set the VOLUME control at the MIN position.
5. Adjust the timer to the desired time for recording to begin.
6. Depress the REC ● button of Deck 2. This also engages the PLAY ▶ button.
7. When the pre-set time arrives, power will be supplied to the unit, and recording will begin.

● All buttons will be released automatically when the end of tape is reached. However, radio reception will continue uninterrupted.

NOTE:

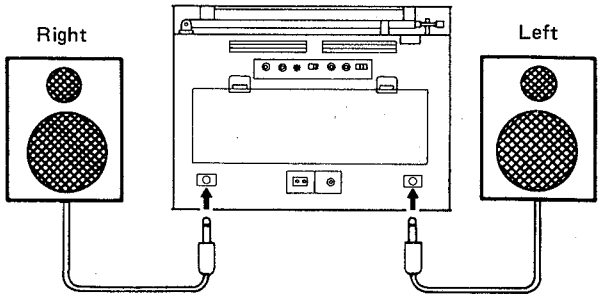
Some timers may operate in a manner different from the above descriptions. Carefully read the instruction manual before using the timer.

4 HEADPHONES

Connect the headphones plug to the PHONES socket on the front panel of the unit. Speaker output will be automatically disconnected. The volume level can be adjusted with the VOLUME control.
Headphones with 8 ohms to 32 ohms impedance are also suitable for use.

5 CONNECTING EXTERNAL SPEAKERS

Use external speaker leads with 3.5mm diameter plugs (speakers, leads, and plugs not supplied). Speakers require 3.2 ohms to 8 ohms impedance. Fit the speaker leads to the speaker system such that phasing (polarity) of speakers is equal. For this it may be necessary to consult your SHARP service engineer. After disconnecting the plugs of the unit speaker, connect the external speaker plugs to the appropriate speaker sockets.

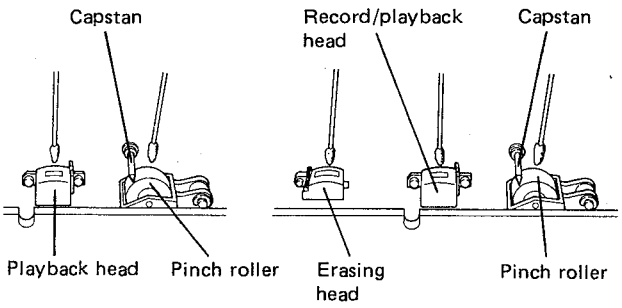


MAINTENANCE

■ CLEANING THE TAPE HEADS

Clean the heads frequently to remove dust and tape residue. Dirt on the heads will impair the sound quality of both recording and playback.
There are two methods for head cleaning:

A. The simpler method is to use a head cleaning cassette, available at most audio stores. Follow the instructions supplied with the cleaning cassette.
B. The heads can be also cleaned manually:
   1. Depress the EJECT ▲ buttons of Deck 1 and Deck 2 in order to open the cassette compartment. Remove the cassette tape in the compartment.
   2. Depress the PLAY ▶ buttons of Deck 1 and Deck 2.
   3. Wipe the heads with a soft lint-free cloth or cotton swab that has been partially soaked in alcohol (methylated spirit), until the heads are free of all dirt and residue deposits.



■ CLEANING MECHANICAL PARTS

Dust or magnetized particles attached to the capstan or pinch roller are the direct cause of uneven tape speed during recording and playback. This is the cause of "wow" and "flutter", namely tape speed variations below and above normal speed, respectively. The capstan or pinch roller should therefore be thoroughly cleaned with a soft lint-free cloth or cotton swab partially soaked in alcohol (methylated spirit).

■ CLEANING THE CABINET

Use only a damp cloth for cleaning the cabinet.

SPECIFICATIONS

Power source:	AC 110V ~ 120V and 220V ~ 240V, 50/60Hz DC 15V (UM/SUM-1, R 20, HP-2 or D type x 10, or external 15V DC)
Output power:	PMPO; 36W (18W + 18W) (AC operation) MPO; 30W (15W + 15W) (AC operation) MPO; 20W (10W + 10W) (AC operation, DIN 45 324) RMS; 15W (7.5W + 7.5W) (DC operation, DIN 45 324)
Semiconductors:	36 ICs 52 transistors 90 diodes 39 LEDs
Dimensions: Width;	753mm
Height;	283mm
Depth;	160mm
Weight:	10.0kg (22 lbs.) without batteries

TAPE RECORDER

Tape:	Compact cassette tape
Frequency response:	30Hz – 14,000Hz (normal tape) 30Hz – 16,000Hz (CrO_2 tape) 30Hz – 17,000Hz (metal tape)
Signal/noise ratio:	55 dB (Deck 1, playback) 50 dB (Deck 2, recording)
Wow and flutter:	0.06% (WRMS), 0.17% (DIN 45 511)
Input impedance:	Mixing/external mic; 600 ohms Line in/phono; 20 kohms/50 kohms
Loaded impedance;	
Headphones;	8 ohms – 32 ohms
External speakers;	3.2 ohms – 8 ohms
Line out;	50 kohms

RADIO

Frequency range:	LW; 150kHz – 285kHz MW; 520kHz – 1620kHz SW; 5.95 MHz – 18 MHz FM; 87.6 MHz – 108 MHz

MUSIC PROCESSOR

Musical Scale Keys:	16
Sound Range:	E3 ~ F6
Tones:	3
Rhythms:	4
Automatic tune memory:	Up to 7 preset sharps (♯) and flats (♭) can be memorized.
Chords:	35 inputs are possible.
Sound lengths:	5 (triplets, dots and ties can be used in combination.)
Rests:	5 (triplets, dots and ties can be used in combination.)
Memory capcity:	340 notes or rests
Principle functions:	Automatic playback of melody, rhythm and chords, Simultaneous playback of rhythm and chords, One-touch automatic playback, Manual playback, Correction, deletion and addition functions, Programme loading and saving function, Tempo adjustment function, Pitch adjustment function, Independent adjustment of accompaniment and melody volume, Memory back-up function (batteries can hold memory for approx. 1 year), LED indicator functions (Musical Scale indicators, Key signature and tonality set indicators, Chord Set indicators, Rest and Correct indicators)

SPEAKER

Speakers:	16cm (6-1/2") woofer x 2 Horn type tweeter x 2
Impedance:	3.2 ohms
Rated power:	10W

Maximum power handling capacity: 20W

SHARP reserves the right to make design and specification changes for product improvement without prior notice.